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Diamond Chuitna Coal Project
Final Environmental Impact Statement
Volume 2. Appendices

(U.S.) Environmental Protection Agency, Seattle, WA

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The final Environmental Impact Statement (EIS) for the Diamond Chuitna Coal Project was prepared pursuant to the National Environmental Policy Act. The actions to be considered are the approvals of federal permits for the proposed project located on the west side of Cook Inlet in south central Alaska. The project would consist of a surface coal mine, haul road, a coal conveyor loading to a port facility on Cook Inlet, dock facilities, and other ancillary facilities. Three action alternatives and a No Action Alternative are discussed in detail. Rationale for eliminating various options are given. The preferred alternative would include construction of a port site at Ladd, an eastern transportation corridor, development of a housing facility at Lone Creek, and a conveyor system which would parallel the haul road and transport coal to the port site. The impacts of the proposed project are considered in terms of vegetation, fish, wildlife, wetlands, water quality and hydrology (both surface and subsurface), physical and chemical oceanography, air quality, visual resources, cultural resources, subsistence, socioeconomics, recreation, technical feasibility and future uses of facilities.

The Final EIS includes responses to comments on the Draft EIS and revisions to the Draft EIS. The Final EIS was distributed for a 30-day review period.

17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement

19. Security Class (This Report)

20. Security Class (This Page)

21. No. of Pages

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(See ANSI-Z39.18)

See Instructions on Reverse

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Chapter 13.0

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Appendix A

Terrestrial Habitat Evaluation

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APPENDIX A
TERRESTRIAL HABITAT EVALUATION

1.0 INTRODUCTION

This terrestrial habitat analysis was done for the Diamond Chuitna Coal Project EIS using data collected from several sources including the coal project baseline studies, the Susitna River Basin studies conducted by the Alaska Department of Fish and Game (ADF&G), the U.S. Fish and Wildlife Service (USFWS) and other government agencies, and the USFWS Habitat Evaluation Program. The purpose of the analysis was to identify the types and quantities of habitats which would be affected by the coal project, to describe their values to key wildlife species, and to provide a quantitative basis for comparison of habitat impacts among project alternatives and between premining and postreclamation conditions.

2.0 METHODS

Evaluation species were selected on the basis of their high public interest and/or because they serve as indicator species for habitats that have significant ecological value. Using these criteria, the following species were chosen: moose (_Alces alces_), brown bear (_Ursus arctos_), black bear (_U. americanus_), trumpeter swan (_Cygnus buccinator_), and lesser sandhill crane (_Grus canadensis_). Moose, brown bear, and black bear are upland species whereas swans and sandhill cranes inhabit wetland and aquatic habitats.

The basis for the terrestrial habitat evaluation was the composite vegetation maps developed by the Soil Conservation Services (SCS) and USFWS for the Beluga region and the vegetation maps developed during the project baseline study program (ERT 1984b). The ERT maps are at a larger scale than those produced by SCS/USFWS and were used for habitat delineation within the mine area, southern transportation corridor, and Granite Point port area. Direct comparisons between the two mapping efforts were difficult due to the significant differences in vegetation interpretation. The differences are outlined in Table 1.

The habitat units used in the analyses for each species roughly correspond to the vegetation units delineated on the base maps. The units were then grouped into four categories which correspond with the habitat value ratings from the USFWS mitigation policy (Table 2). The ratings indicate the extent to which a particular habitat provides the life requirements for the species under consideration. It is a rating of a habitat's overall suitability. A habitat for a particular species is considered only as valuable as the life factor which is the most limited.

Table 1

VEGETATION CLASSIFICATION SYSTEM CORRELATION

Map Unit #	Vierreck et al. (1982)	Map Unit #	U.S. Forest Service (1979)	U.S. Fish and Wildlife Service (1979)
1	Closed Broadleaf Forest/Paper Birch	24	Closed broadleaf forest/paper birch	--
2	Open Broadleaf Forest/Balsam Poplar	28	Cottonwood, medium aged stands1	
-	Closed Needleleaf Forest/White Spruce[2]	25	Coniferous, white spruce, tall stands, closed forest1	Palustrine - forested needleleaved evergreen
3	Open Mixed Forest/Spruce-Birch	26	Deciduous, mixed, old stands, closed forest	Palustrine - forested mixed needleleaved evergreen, broadleaved deciduous[3]
4	Needleleaf Woodland/Black Spruce	41	Black spruce, short stands, closed forest	Palustrine - forested needleleaved evergreen[4]
5	Mixed Woodland/Spruce-Birch	32	Deciduous, mixed, medium aged, woodland	Palustrine - forested mixed needleleaved evergreen broadleaved decidous[3]
5	Mixed Woodland/Spruce-Birch	34	Deciduous, mixed, old stands, woodland	Palustrine - forested needleleaved evergreen broadleaved deciduous[3]
6	Open Tall Shrub Scrub/Willow	61	Alder-willow	Palustrine - scrub/shrub broadleaved deciduous[4]
7	Closed Tall Shrub Scrub/Alder	60	Alder	Palustrine - scrub/shrub broadleaved deciduous[3]
8	Open Low Shrub Scrub/Sweetgale-Grass Fen	68	Sphagnum bog	Palustrine - emergent narrowleaved persistent[4]
8	Open Low Shrub Scrub/Sweetgale-Grass Fen	69	Sphagnum shrub bog	Palustrine - scrub/shrub broadleaved deciduous[4]
-	Open Low Scrub/Willow-Grass Tundra[2]	64	Sedge-grass	Palustrine - emergent persistent[3]
-	Dry Gaminoid Herbaceous/Midgrass-Shrub[2]	65	Herbaceous	Palustrine - emergent persistent[4]
9	Mesic Gaminoid Herbaceous/Bluejoint-Herb	63	Upland grass	Palustrine - emergent persistent[4]

[1] Not mapped within Diamond-Chuitna study area.

[2] Not identified within lease area or transportation corridor.

[3] Classified as wetland when located on floodplains.

[4] Classified as wetland when located on very poorly and poorly drained soils or on floodplains.

Table 2

RESOURCE CATEGORIES AND MITIGATION PLANNING GOALS[1]

Resource Category	Habitat Value	Designation Criteria	Mitigation Planning Goal
1	very high	Habitat to be impacted is of high value for evaluation species and is unique and irreplaceable on a national basis or in the ecoregion section.	No loss of existing habitat value.
2	high	Habitat to be impacted is of high value for evaluation species and is relatively scarce or becoming scarce on a national basis or in the ecoregion section.	No net loss of in-kind habitat value.
3	medium	Habitat to be impacted is of high to medium value for evaluation species and is relatively abundant on a national basis.	No net loss of habitat value while minimizing loss of in-kind habitat value.
4	low	Habitat to be impacted is of medium to low value for evaluation species.	Minimize loss of habitat value.

---

[1] Taken from FWS Mitigation Policy (FR Vol. 46, No. 15, 23 January 1981).

Models of species-specific habitat requirements have been constructed by USFWS for many Alaskan wildlife species using all pertinent data available (USFWS 1980). These models and the model of moose habitat developed by ADF&G for the Susitna River Basin were used in this study.

The habitat parameters used in the models are discussed below in the species accounts. In addition, snow accumulation was included as a parameter for this analysis as it was considered a habitat factor of major importance for several of the species under consideration. From snow accumulation contours developed for the Susitna River Basin study, an estimate of 152 m (500 ft) was chosen as the elevation above which moose would encounter mobility problems in the winter due to snow depth (ADF&G 1984). It also was considered the level above which the ice-free season was too short to allow trumpeter swan nesting (King 1968; Hansen et al. 1971).

To provide additional perspective to the question of moose winter habitat value, the distribution of moose based on actual field observations (Faro 1985a) was delineated on the winter range maps. A fall rutting concentration, not directly related to vegetation type, was also delineated based on field observations (Faro 1985a).

Location maps of proposed project components were overlain on the vegetation maps and the surface area of the habitat types within their boundaries was estimated using a compensating polar planimeter. Areas were rounded to the nearest acre and then converted to hectares. The area of affected habitat along the southern transportation corridor was con-sidered to be the area from the west side of the haul road to the east side of the conveyor system except where the road separates from the conveyor at the Chuitna River crossing. The 61 m (200 ft) undisturbed buffer zone between the haul road and conveyor was considered part of the direct habitat loss for this analysis.

3.0 SPECIES ACCOUNTS

3.1 LESSER SANDHILL CRANE

3.1.1 Life History Information

Sandhill cranes are common summer residents and breeders in the Cook Inlet Region. They are most abundant during spring and fall migration and use tidal flats and muskegs of the area for staging and feeding. They are common nesters in the refuges of upper Cook Inlet but were found to be uncommon nesters in the Beluga region (ERT 1984a).

Sandhill cranes are birds of open country. Their summer habitat consists of tundra areas with short vegetation such as mosses, labrador tea (Ledum spp.) dwarf birch (Betula spp.) crowberry (Empetrum nigrum), and cloudberry (Rubus chanaemorus) (Walkinshaw 1949). Cranes roost at night and during the day between periods of feeding in wetlands and aquatic areas. They are opportunistic omnivores and are able to subsist on a wide variety of food items such as crowberry, cloudberry, mice, small fish, snails, and flying insects (Boise 1977). Breeding cranes usually feed within close proximity of the nest (Walkinshaw 1949).

3.1.2 Habitat Parameters

Most habitat work related to sandhill cranes in Alaska has been done in the tundra habitats of the Yukon-Kuskokwim Delta. These studies, which primarily addressed suitability of habitats for feeding and nesting, indicate that dry sites near water bodies appear to be very important for nesting. Cranes also prefer sites which offer unobstructed views of the surrounding terrain. Habitat parameters for lesser sandhill cranes are outlined on Table 3.

Because data from other geographic regions were lacking, no attempt was made to rate habitat values according to the Table 2 criteria; rather, a simple model was developed to differentiate between suitable and unsuitable crane habitat for the Diamond Chuitna project. Cover and suitability for reproduction were the life requirements used to delineate overall habitat suitability. Habitat above 152 m (500 ft), which might otherwise be considered suitable, was determined to be limiting for reproduction due to late snow melt off.

3.2 TRUMPETER SWAN

3.2.1 Life History Information

Trumpeter swans are common migrants and breeders on the Kenai Peninsula and along the west coast of Cook Inlet (USFWS 1980). Once thought to be endangered, recent surveys of trumpeters on their breeding grounds indicate an expanding population with a 94 percent increase between 1975 and 1980. A high ratio of non-breeding to breeding swans in Alaska appears indicative of the fact that the swans are near the northern limit of their range.

Breeding trumpeters require relatively shallow static ponds or lakes which range in size from 2.4 to 14 ha (6 to 35 ac) with significant amounts of emergent vegetation such as Equisetum fluviatile, Carex sp. and Menyanthes trifolia (Hansen et al. 1971). A 145- to 150-day span between breakup and freezeup is needed to successfully complete the reproductive cycle (Hansen et al. 1971). This suggests that, in the project area, most breeding takes place below 500 feet elevation (King 1968; Hansen et al. 1971).

Table 3

HABITAT PARAMETERS FOR EVALUATION OF SANDHILL CRANE HABITAT SUITABILITY

Life Requisite	Habitat Suitability	
	Suitable	Unsuitable
Cover	open habitat low vegetation good visibility of surrounding area	closed to open forest tall shrub poor visibility of surrounding area
Reproduction	wet with occasional raised areas 73 m (80 yd) or less to freshwater body below 152 m (500 ft) elevation	uniformly wet with no raised areas uniformly dry greater than 73 m (80 yd) to freshwater body greater than 152 m (500 ft) elevation

Source: USFWS 1980

The range of non-breeding swans is closely tied to that of the breeding population. Ponds and lakes used by non-breeders should provide adequate open water and emergent vegetation should not be used by breeding pairs because territorial conflicts may arise (USFWS 1980). Since the present population is expanding, lakes and ponds which appear suitable for breeding but are not used at this time must be considered potential breeding habitat.

3.2.2 Habitat Parameters

The available baseline data on potential habitats for swans in the study area are somewhat limited since the vegetation map units are quite broad and do not address aquatic vegetation or water depth along the shores of lakes and ponds. Adult and juvenile swans feed on land only to a limited extent; cygnets feed exclusively in the water. Therefore, upland terrestrial vegetation along the perimeters of water bodies was not considered in the analysis. Habitat parameters for trumpeter swans are presented in Table 4. The 152 m (500 ft) contour was used as an approximate upper limit for breeding habitat. The extent of aquatic and emergent vegetation was determined from wetland maps developed by the USFWS wetlands inventory.

Table 4

HABITAT PARAMETERS FOR EVALUATION OF TRUMPETER SWAN HABITAT SUITABILITY

Life Requisite	Habitat Suitability High	 Medium	 Low
Size of pond or lake	2.4 - 14 ha (6 - 35 ac)	14.4 - 51.2 (36 - 128 ac)	>51.2 ha (128 ac)
Reproduction Elevation above sea level	<152 m (500 ft)	<152 m (500 ft)	>152 m (500 ft)
Food and cover Aquatic and emergent vegetation	Abundant	Common	Uncommon to none

Source: USFWS 1980

3.3 BLACK BEAR

3.3.1 Life History Information

Black bears are common residents of the Cook Inlet region and are found in many different habitat types. They feed primarily on grasses, sedges (Carex sp.), horsetail (Equisetum sp.), and when available, carrion (ADF&G 1976). Late summer and fall food items consist primarily of salmon and berry-producing plant species such as blueberry (Vaccinium sp.), elderberry (Sambucus rasemosa), bearberry (Arctostapholos sp.), crowberry (Empetrum nigrum), and high-bush cranberry (Viburnum edule). Bears of all ages avoid extensive open areas such as grasslands, low shrublands, and tundra except when they are feeding on alpine berry patches or in tideflats (Schwartz and Franzman 1980; Fame 1974; McIlroy 1970). Black bears usually do not range further than 315 m (350 yd) from cover to feed (Pacific Working Group 1977). Females with cubs will often remain near mature trees so that escape cover is readily available for the cub.

3.3.2 Habitat Parameters

The primary habitat characteristics used to evaluate black bear habitat in the project area were the availability and diversity of preferred herbaceous food species, availability of salmon, and the proximity to mature trees. These parameters are shown on Table 5.

Table 5

HABITAT PARAMETERS FOR EVALUATION OF BLACK BEAR HABITAT SUITABILITY

Life Requisite	Habitat Suitability High	Habitat Suitability Medium	Habitat Suitability Low
Food			
Diversity of food species	2-4 species	1 species	-
% cover herbaceous food species spring/early summer	16 - 100%	5 - 15%	< 5%
Availability of salmon	common to abundant	uncommon	rare to none
Cover			
Proximity to mature trees (Escape cover)	<400 m (440 yd) to mature trees or tall shrub with >25% canopy cover	400 m (440 yd) to 8 km (5 mi)	>5 mile to mature trees

Source: USFWS unpublished model

3.4 BROWN BEAR

3.4.1 Life History Information

Brown bears are distributed throughout much of the coastal area of Cook Inlet including the Beluga region. They are generally solitary animals. Brown bears feed on sedges, grasses (Calamagrostis sp. and Arctogrostis sp.), and horsetails during the spring and early summer but will use a wide variety of foods when available (Sommerville 1965). During the summer and fall, bears feed on salmon. From mid-summer through fall, bears also rely heavily on several types of berries including blueberries, soapberries (Shiphardia canadensis), crowberries, bearberries, and lowbush cranberries (Vaccinium vitisideae) (USFWS 1980).

Brown bears are found in a variety of habitat types but generally prefer relatively open higher areas (Erickson 1965; Sommerville 1965). They also extensively utilize low-lying areas free of snow in the spring after emerging from their dens. Bears on Kodiak Island spent 50 percent of their time in low-lying areas, 35 percent in foothills, and 15 percent in uplands (Berns and Hensel 1972).

Elevation of denning habitats varies in Alaska. In the upper Susitna Valley, dens were found at elevations averaging 1,468 m (4,818 ft) (Miller and McAllister 1982). On Kodiak Island and the Alaska Peninsula, dens averaged 549 m (1,800 ft) and 396 m (1,300 ft) in elevation, respectively. Bears within the study area very likely den at lower elevations (ERT 1984a). DOWL (1981) suggests that much of the Beluga area is unusable or marginal bear denning habitat because it is an elevated plateau and has considerable lowland tree cover.

3.4.2 Habitat Parameters

The parameters used to evaluate brown bear habitats in the project area were food value (by season) and cover (Table 6). Reproduction was not used as an evaluation parameter. Brown bears have relatively large home ranges. It is quite possible that if vegetation types within the project area were not optimum for food, bears would feed in adjacent more suitable areas.

3.5 MOOSE

3.5.1 Life History Information

Moose are common inhabitants of the Beluga region and constitute an important economic resource for residents and non-residents alike. Moose are primarily associated with habitat types that include lowland bog communities, upland shrub areas, and early successional communities influenced by fire or flooding (LeResche et al. 1974).

Calving occurs from late May through June and takes place primarily in lowland bog areas. Cows with calves often remain in these areas throughout the summer so that they can feed on the abundant herbaceous vegetation found there. Moose move from their lowland wintering areas into upland shrub areas throughout the summer and fall. In late fall and early winter, they move down into willow communities along rivers and streams (LeResche et al. 1974).

Moose feed mostly on browse-type vegetation. Of these, willows (*Salix* sp.) are the most important species followed by birch (*Betula* sp.). Other species consumed are cottonwood (*Populus* sp.), aspen (*Populus tremuloides*), and alder (*Alnus* sp.). During the winter, 80 percent of the diet consists of browse species, whereas during the summer, grasses and forbs constitute a significant portion of the diet. Important species include sedges, horsetail, bluejoint grass (*Calamagrostis canadensis*), and fireweed (*Epilobium angustifolium*) (USFWS 1980).

Table 6

HABITAT PARAMETERS FOR EVALUATION
OF BROWN BEAR HABITAT SUITABILITY

Life Requisite	Habitat Suitability		
	High	Medium	Low
Food			
% grasses and horsetail (spring/early summer)	>20%	10-20%	<10%
% berry-producing species (late summer/early fall)	>20%	1-19%	-
Distance to salmon stream (late summer/early fall)	<30 mi	30-50 mi	>50 mi
Cover			
% tree canopy cover	0-60%	60-100%	-

Source: USFWS 1980

3.5.2 Habitat Parameters

Because habitat requirements for moose differ seasonally, the criteria used for the analysis were divided into two categories: winter range and spring/summer/fall range. Parameters used were food value and cover. Key variables for both seasons were browse quality (i.e., vegetation species and percent of total available browse), quantity (total available willow, birch, and alder), and presence of lowbush cranberry (Tables 7 and 8).

4.0 HABITAT ANALYSIS RESULTS

Up to 2,500 ha (6,175 ac) would be lost as a result of the development of the mine and mine facilities, transportation corridor, airport, housing facilities, and port site. The area includes seven of the nine vegetation types located within the project area and approximately 40 ha (99 ac) of aquatic habitat in the form of small ponds. The vegetation type sustaining the greatest loss would be mixed woodland/spruce-birch followed by closed tall shrub scrub/alder and low shrub/sweetgale-grass fen, respectively. The latter is a wetland vegetation type.

The habitat suitabilities of the vegetation types according to the parameters examined for the key wildlife species are summarized in Table 9. Table 10 provides a

Table 7

HABITAT PARAMETERS FOR EVALUATION OF MOOSE WINTER RANGE SUITABILITY

Life Requisite	Habitat Suitability High	 Medium	 Low
Food			
Browse quality species and % total available	*Salix* sp. *Betula paperifera* *Populus* sp.	*Salix* sp. *Betula glandula* *Betula nana*	*Alnus* sp.
Browse quantity total available *Salix* sp., *Betula* sp., *Alnus* sp.	>300 lb/ac	100-200 lb/ac	1-99 lb/ac
% cover of *Vaccinium vitis-idaea*	>5%	1-5%	<1%
Cover[1]			
Availability of cover as indicated by canopy[2] closure	CL-CF CL-DF CL-MF	OP-CF OP-DF OP-MF	T/S

[1] Cover types - CF - Coniferous forest
DF - Deciduous forest
MF - Mixed forest
LS - Low shrub
TS - Tall shrub
HSG - Herbaceous sedge/grass

[2] Canopy type - CL - Closed
OP - Open

Source: ADF&G 1984

Table 8

HABITAT PARAMETERS FOR EVALUATION OF MOOSE SPRING/SUMMER/FALL RANGE SUITABILITY

	Habitat Suitability		
Life Requisite	High	Medium	Low
Food			
Browse quality species and % total available	*Salix* sp. *Betula paperifera* *Populus* sp.	*Salix* sp. *Betula glandulosa* *Betula nana*	*Alnus* sp.
Browse quantity total available *Salix* sp., *Betula* sp., *Alnus* sp.	>300 lbs/ac	100-299 lbs/ac	1-99 lbs/ac
Total annual forb production	>120 lbs/ac	300-120 lbs/ac	0-30 lbs/ac
Cover			
Availability of cover as indicated by canopy[2] closure	CL-CF CL-DF CL-MF OP-CF OP-DF OP-MF	-	TG LS HSG

---

[1] Cover types -
CF - Coniferous forest
DF - Deciduous forest
MF - Mixed forest
LS - Low shrub
TS - Tall shrub
HSG - Herbaceous sedge/grass

[2] Canopy type -
CL - Closed
OP - Open

Source: ADF&G 1984

Table 9

HABITAT SUITABILITY OF VEGETATION MAP UNITS FOR WILDLIFE SPECIES

	High		Medium		Low	
Species/ Mapping System	SCS[1]	Viereck[2] et al. 1982		Viereck et al. 1982	SCS	Viereck et al. 1982
Sandhill crane	68,69	8	-	-	-	-
Trumpeter swan	68,69 92	8	91	-		
Black bear	24,26,28 41,32,34 60,61,63 68,69	1,2,3,4 5,7,8,9				
Brown bear	25,26,28 32,34,41 60,61,63 64,65,68 69	2,3,4 5,6,7 8,9	22,24	1		
Moose (spring/ summer/ fall)	24,32,61	1,5,6	21,22,25 26,27,28 29,31,33 34,35,36 60,62,63 68,69	2,3,7 8,9	41,42,43 46	4
Moose (winter)	24,25,27 31,32,61	1,5,6	21,22,26 28,29,33 34,36,41 42,60,62	2,3,4 7	35,43,46 51,63,68 69	8,9

[1] Vegetation classification scheme used in mapping areas outside the project area developed by the USDA, Soil Conservation Service (SCS).

[2] Vegetation classification scheme used within the project area developed by Viereck et al. (1982).

Table 10a

DIRECT LOSS OF WILDLIFE HABITAT AND SUITABILITY OF HABITATS IN HECTARES (ACRES) FROM MINE DEVELOPMENT BY PROJECT COMPONENT

Species		Mine Service Area	10 Year Mine Limit			30 Year Mine Limit
			Pit Area	Stockpile Areas	Roads and Settling Ponds	Pit Area
Sandhill Crane	Suitable	0	0	0	0	0
	X	---	0	0	---	0
	X	---	0	0	---	0
	Unsuitable	22(55)	564(1411)	80(200)	68(169)	2029(5012)
Trumpeter Swan	High	0	0	---	---	0
	Med	0	0	---	---	0
	Low	0	0	---	---	0
	NU[2]	22(55)	575(1438)	80(200)	68(169)	2029(5012)
Black Bear	High	22(55)	564(1411)	80(200)	64(158)	1982(4955)
	Med	0	0	0	0	0
	Low	0	0	0	0	0
	NU	0	11(27)	0	4(10)	23(57)
Brown Bear	High	22(55)	564(1411)	79(198)	64(158)	1982(4955)
	Med	0	0	0	---	0
	Low	0	0	0	---	0
	NU	0	11(27)	1(2ac)	4(10)	23(57)
Moose Spring/Summer/ Fall	High	14(35)	380(950)	47(117)	47(117)	1356(3349)
	Med	8(20)	85(212)	33(83)	21(52)	653(1612)
	Low	0	180(449)	0	0	20(49)
	NU	0	0	0	0	0
Moose Winter	High	0	0	0	0	0
	Med	0	0	0	0	0
	Low	0	0	0	0	0
	NU	22(55)	575(1438)	80(200)	68(169)	2029(5012)
Total		22(55)	575(1438)	80(200)	68(169)	2029(5012)

[1] Exact sighting not finalized.

[2] Not utilized.

Table 10b

DIRECT LOSS OF WILDLIFE HABITAT AND SUITABILITY OF HABITATS IN HECTARES (ACRES) FROM MINE DEVELOPMENT BY PROJECT COMPONENT

		Port Sites		Transportation Corridors			Housing Facilities and Airport			Material Sites[1]		
Species		Granite Point	Ladd	Southern	Eastern	Northern	Lone Creek	Three-Mile	Congahbuna Lake[1]	#5	#7	#8
Sandhill Crane	Suitable	64(158)	6(16)	16(40)	14(35)	23(56)	0	0	6(15)	0	0	15(37)
	X	0	0	0	0	0	0	0	0	0	0	0
	X	0	0	0	0	0	0	0	0	0	0	0
	Unsuitable	16(41)	113(277)	53(131)	40(99)	50(124)	29(72)	29(72)	23(57)	106(262)	119(294)	119(294)
Trumpeter Swan	High	0	9(23)	0	2(6)	1(3)	0	0	2(5)	0	0	0
	Medium	0	0	0	0	0	0	0	0	0	0	0
	Low	0	0	0	0	0	0	0	0	0	0	0
	NU[2]	80(198)	110(271)	69(171)	52(128)	72(177)	29(72)	29(72)	27(67)	106(262)	119(294)	134(331)
Black Bear	High	80(198)	116(287)	69(171)	54(134)	73(180)	29(72)	29(72)	29(72)	106(262)	119(294)	134(331)
	Medium	0	0	0	0	0	0	0	0	0	0	0
	Low	0	0	0	0	0	0	0	0	0	0	0
	NU	0	3(7)	0	0	0	0	0	0	0	0	0
Brown Bear	High	80(198)	116(287)	67(166)	54(134)	73(180)	29(72)	29(72)	29(72)	106(262)	119(294)	134(331)
	Medium	0	0	2(5)	0	0	0	0	0	0	0	0
	Low	0	0	0	0	0	0	0	0	0	0	0
	NU	0	3(7)	0	0	0	0	0	0	0	0	0
Moose Spring/Summer/Fall	High	0	0	22(54)	4(10)	5(12)	25(62)	0	10(25)	85(210)	119(294)	91(224)
	Medium	74(183)	116(287)	46(114)	50(124)	68(168)	4(10)	29(72)	19(47)	21(52)	0	45(111)
	Low	6(15)	0	1(3)	0	0	0	0	0	0	0	0
	NU	0	3(7)	0	0	0	0	0	0	0	0	0
Moose Winter	High	0	0	1(2)	0.5(2)	2(4)	0	0	10(25)	0	119(294)	0
	Medium	16(41)	110(271)	3(8)	29(73)	32(79)	0	29(72)	2(5)	0	0	0
	Low	64(157)	6(16)	38(93)	14(34)	22(53)	0	0	3(6)	0	0	0
	NU	0	3(7)	28(68)	19(47)	18(45)	29(72)	0	14(36)	106(262)	0	134(331)
Total		80(198)	119(293)	69(171)	54(134)	73(180)	29(72)	29(72)	29(72)	106(262)	119(294)	134(331)

[1] Exact sighting not finalized.

[2] Not utilized.

breakdown by project component of the surface area of the various habitat types according to the value to the key species.

4.1 LESSER SANDHILL CRANE

Distribution of sandhill crane habitat for the study area is given on Figure 1 and within Diamond Alaska's proposed project area on Figure 2.

The only vegetation type found to be suitable for sandhill cranes was open low shrub/sweetgale-grass fen. These wetland areas provide adequate open space, food species, and patterned ground necessary for nesting. Areas below the 152 m (500 ft) contour were classified as having an overall habitat quality suitable for nesting cranes. Significantly better crane habitat is found just southwest of the study area in the lowlands of Trading Bay Refuge.

4.1.1 Port Areas

A significant portion (80 percent) of the area of proposed development at the Granite Point Port site is classified as having some suitability for cranes. Only a relatively small portion (2 percent) of the proposed development at the Ladd port site is classified as having some suitability for cranes.

4.1.2 Transportation Corridors

A total of 16 ha (40 ac) of suitable crane habitat makes up only 23 percent which will be lost to the development of the haul road and conveyor system in the southern corridor. Approximately the same amount (27 percent total) of crane habitat would be affected by the eastern corridor. The largest amount of crane habitat 23 ha (56ac) or 32 percent, would be lost within the northern corridor.

4.1.3 Mine and Mine Facilities

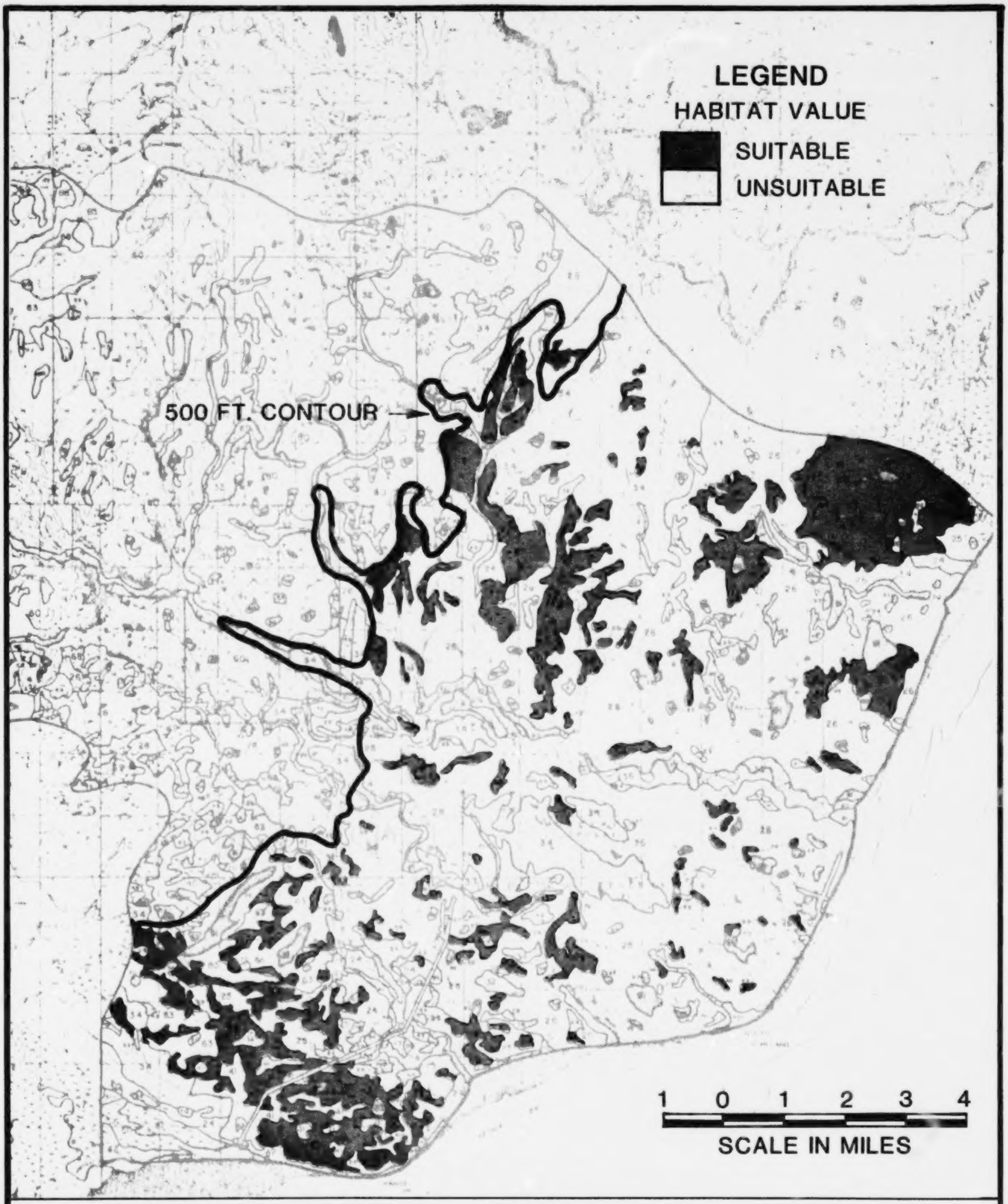
The low shrub communities in the mine area were considered of limited value for reproduction due to shortness of the ice-free season. These areas could possibly provide some feeding or roosting habitat for sandhill cranes.

4.1.4 Airport and Housing Facilities

Only small areas of suitable open low shrub habitat would be lost to development at the Lone Creek site. Use by nesting cranes would be limited by elevation.

The Threemile housing facility site has no suitable crane habitat within the area to be cleared.

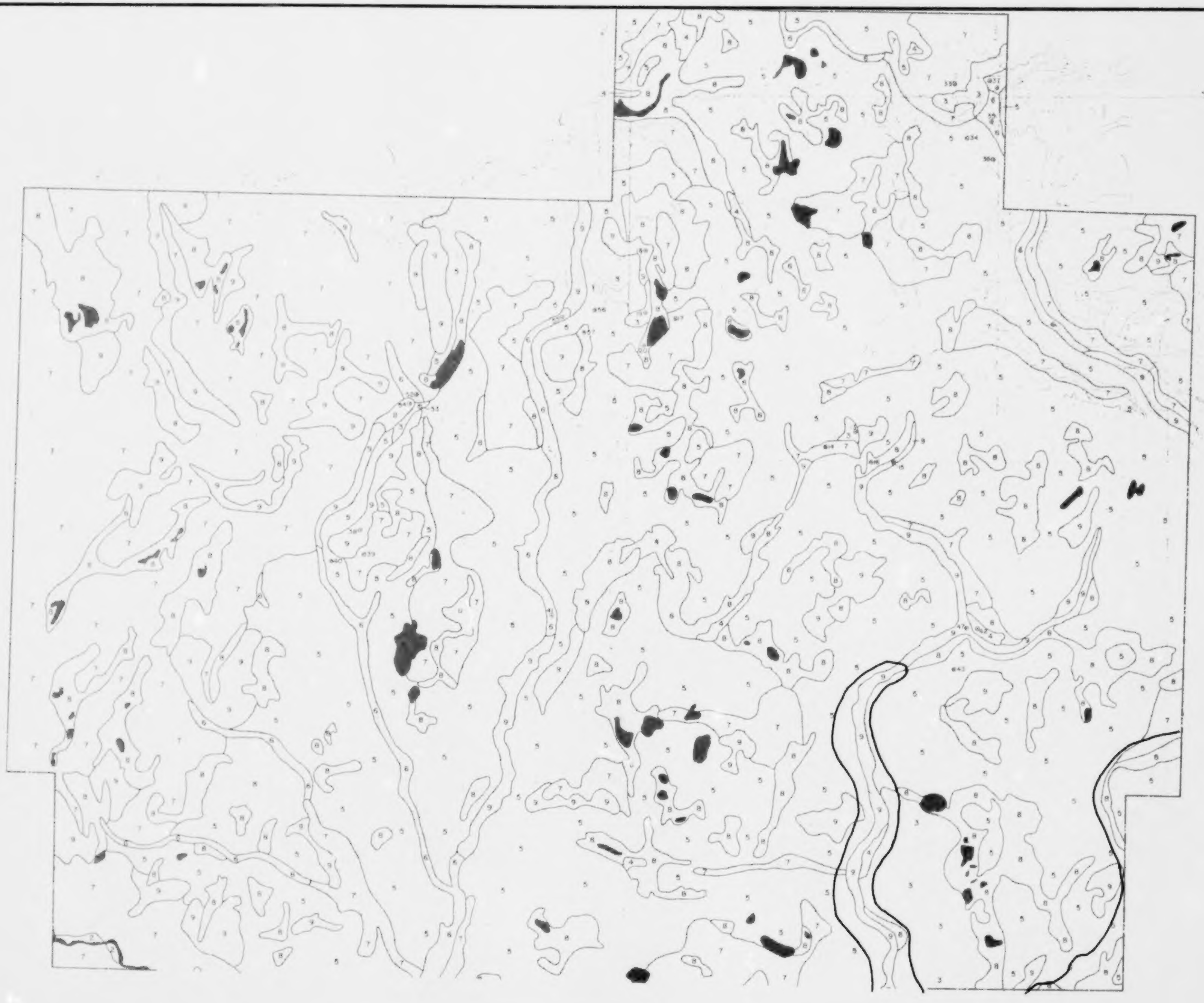
The Congahbuna Lake site is near the 152 m (500 ft) contour, but would likely receive some crane use. Approxi-

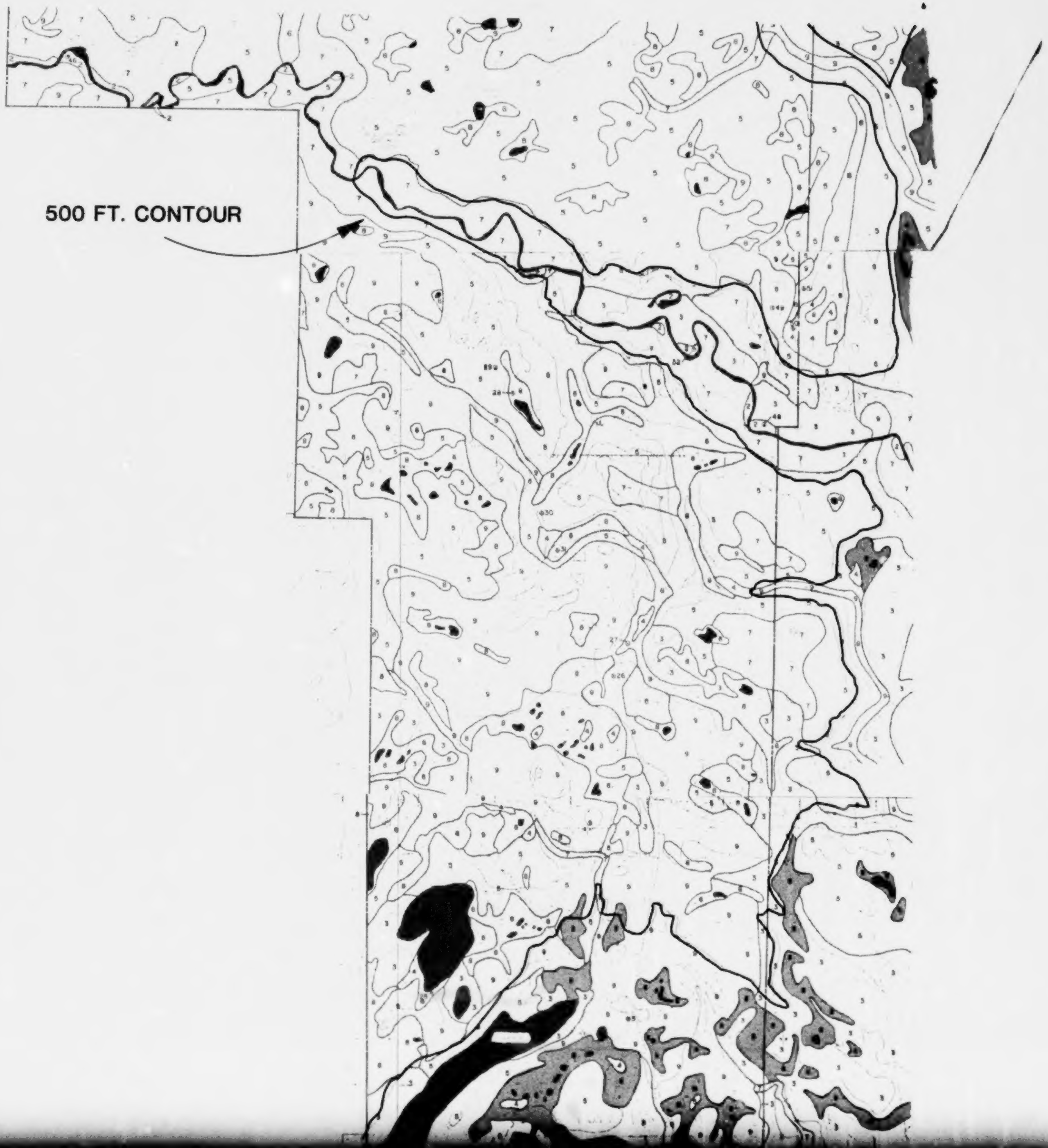

LEGEND
HABITAT VALUE
SUITABLE
UNSUITABLE
500 FT. CONTOUR
1 0 1 2 3 4
SCALE IN MILES

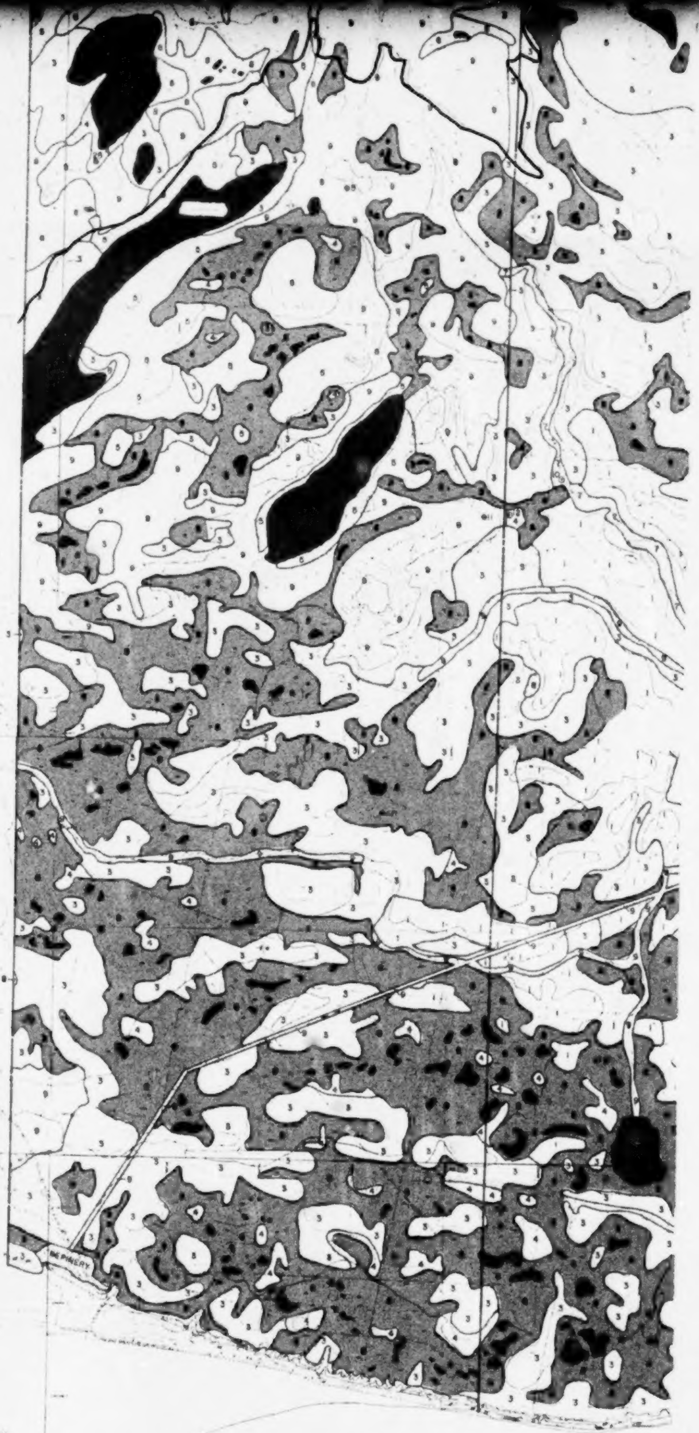
SANDHILL CRANE NESTING HABITAT IN STUDY AREA

Diamond Chuitna Environmental Impact Statement

FIGURE 1




500 FT. CONTOUR



LEGEND
HABITAT VALUE
▨ SUITABLE
☐ UNSUITABLE
SCALE IN FEET
0
2000
4000
8000

SANDHILL CRANE NESTING HABITAT IN PROJECT AREA

Diamond Chuitna Environmental Impact Statement	FIGURE 2

mately 20 percent would be suitable crane habitat. Since the exact site has not been delineated, this amount may vary.

4.1.5 Material Sites

The only material site with any significant amount of potential crane habitat is Site #8 which has approximately 15 ha (37 ac) of low shrub habitat. This area is proximate to the 152 m (500 ft) elevation which suggests it has limited value for crane reproduction.

4.2 TRUMPETER SWAN

Within the study area, a total of 14 suitable aquatic habitats were identified as having potentially high value as swan nesting habitat. Only areas of potentially high value were delineated outside the Diamond Alaska project area (Figure 3). Habitat possibly suitable for swans within the project area is presented in Figure 4.

4.2.1 Port Sites

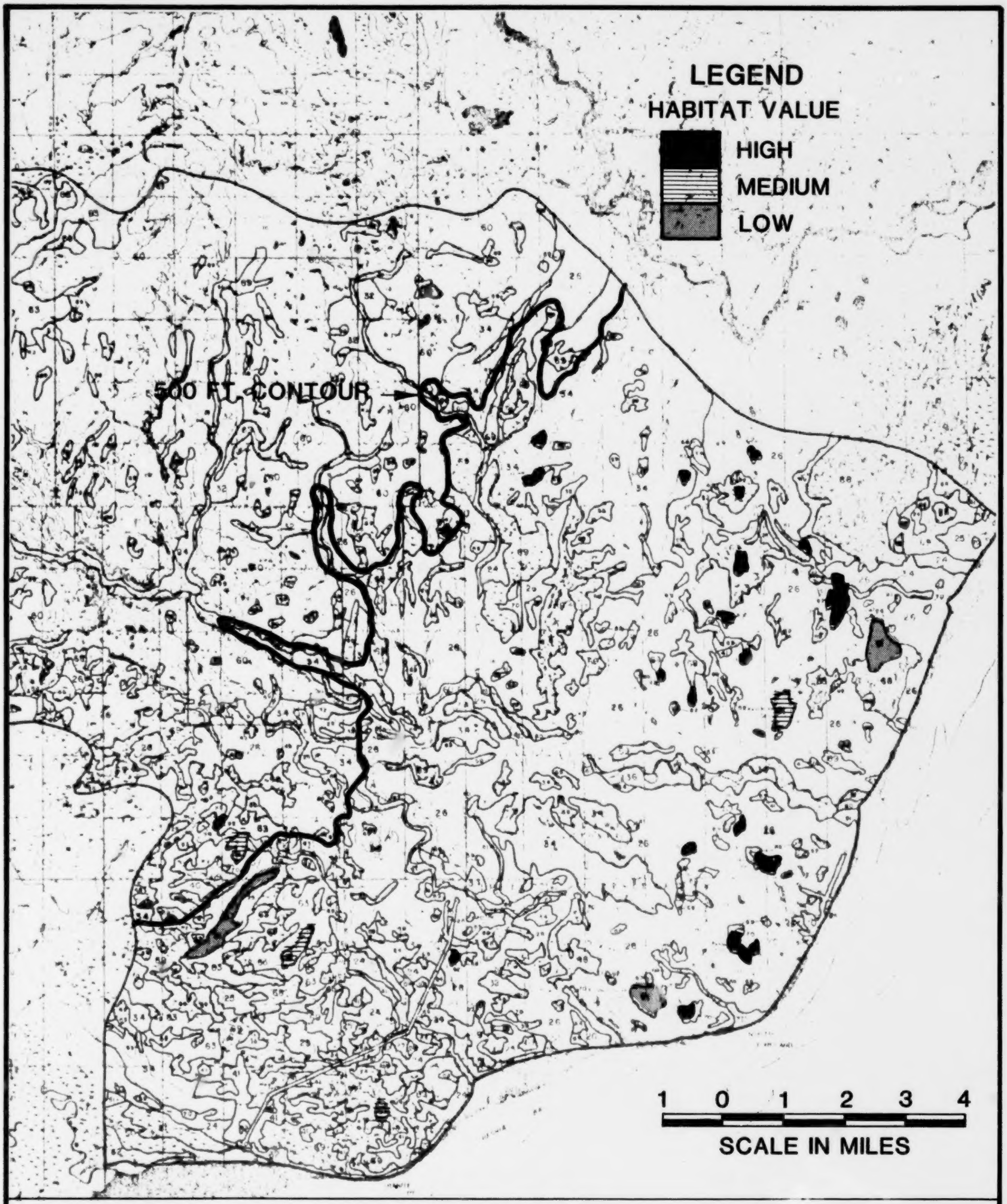
No swan nesting habitat was identified in the area of the Granite Point port site. Some wetland types could conceivably be used by non-breeders but this would be only to a very small degree because of the lack of open water bodies. These wetland types were classified as "not utilized".

At the Ladd port site, two small ponds will be directly affected by the proposed development. The smallest is below the minimum size for swan nesting habitat, but the larger one would be classified as high quality. Another small lake just north of the port, also high quality, would be indirectly affected by the development of this site.

4.2.2 Transportation Corridors

Only two lakes within the southern transportation corridor were classified as having a high suitability for trumpeter swans (Figure 4). However, both lakes are near the 152 m (500 ft) elevation which may limit their use for swan breeding in years with late springs. A total of three lakes within the corridor were classified as moderate value based primarily on their size. The largest lake, Congahbuna Lake, ranked low because it is larger than the size preferred by swans. It may be used for feeding by non-breeders since aquatic and emergent vegetation is plentiful at the south end of the lake.

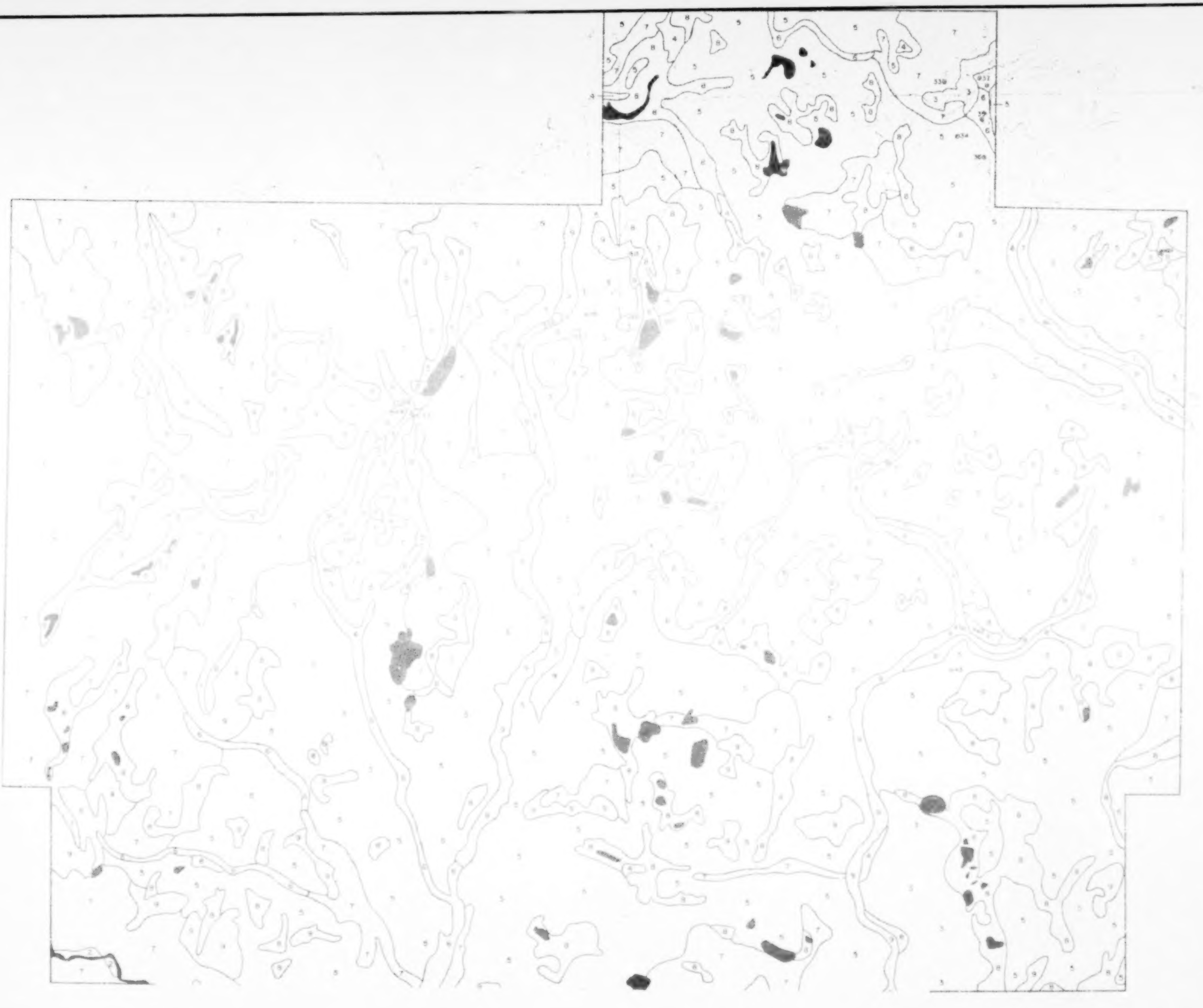
Two small lakes and one large lake, Chuitbuna Lake, within or adjacent to the eastern corridor were considered potential swan nesting habitat. Although a final route selection would likely go around these lakes, indirect impact from disturbance would likely make it unsuitable for nesting.

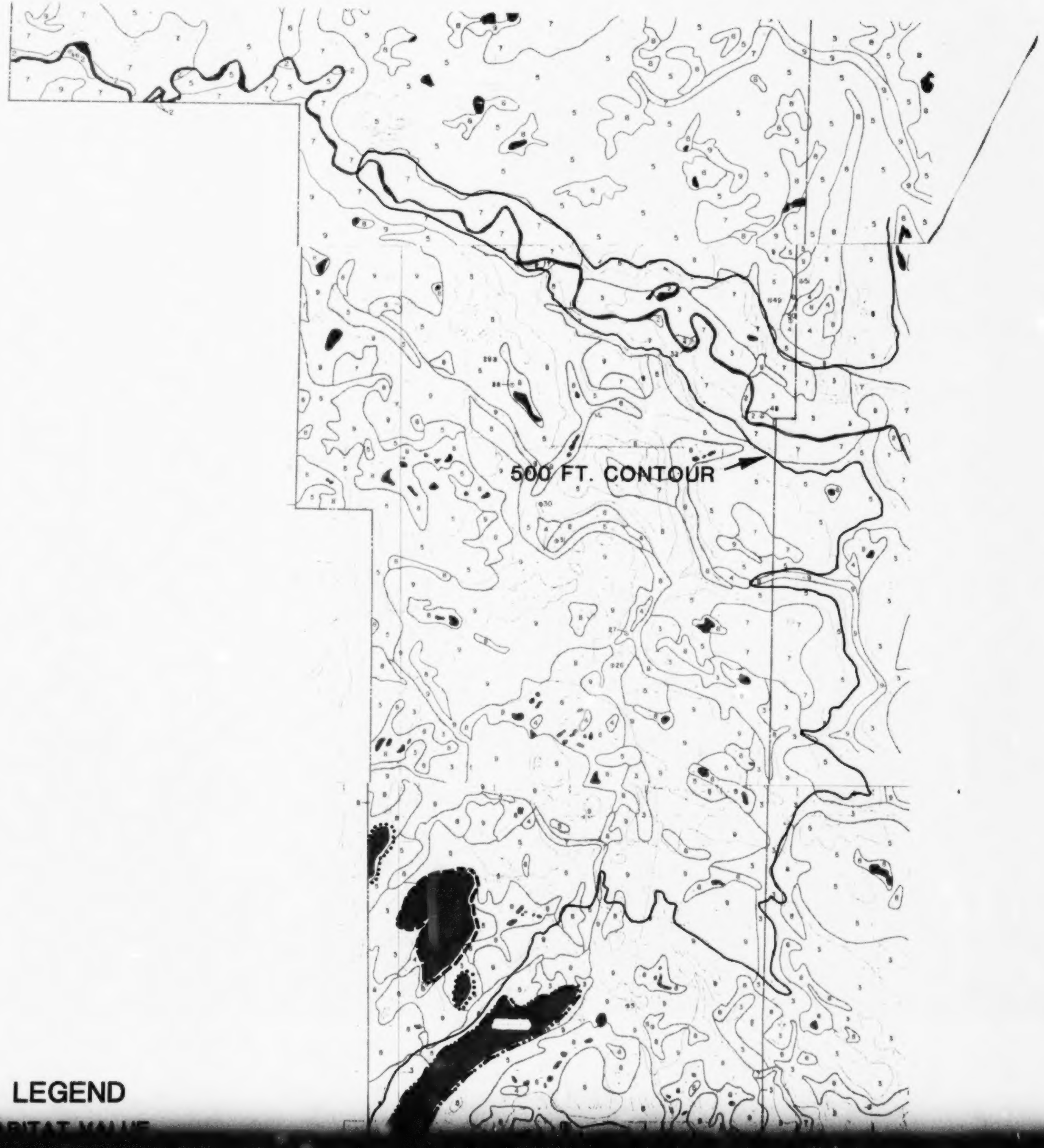

LEGEND
HABITAT VALUE
HIGH
MEDIUM
LOW
500 FT. CONTOUR
1 0 1 2 3 4
SCALE IN MILES

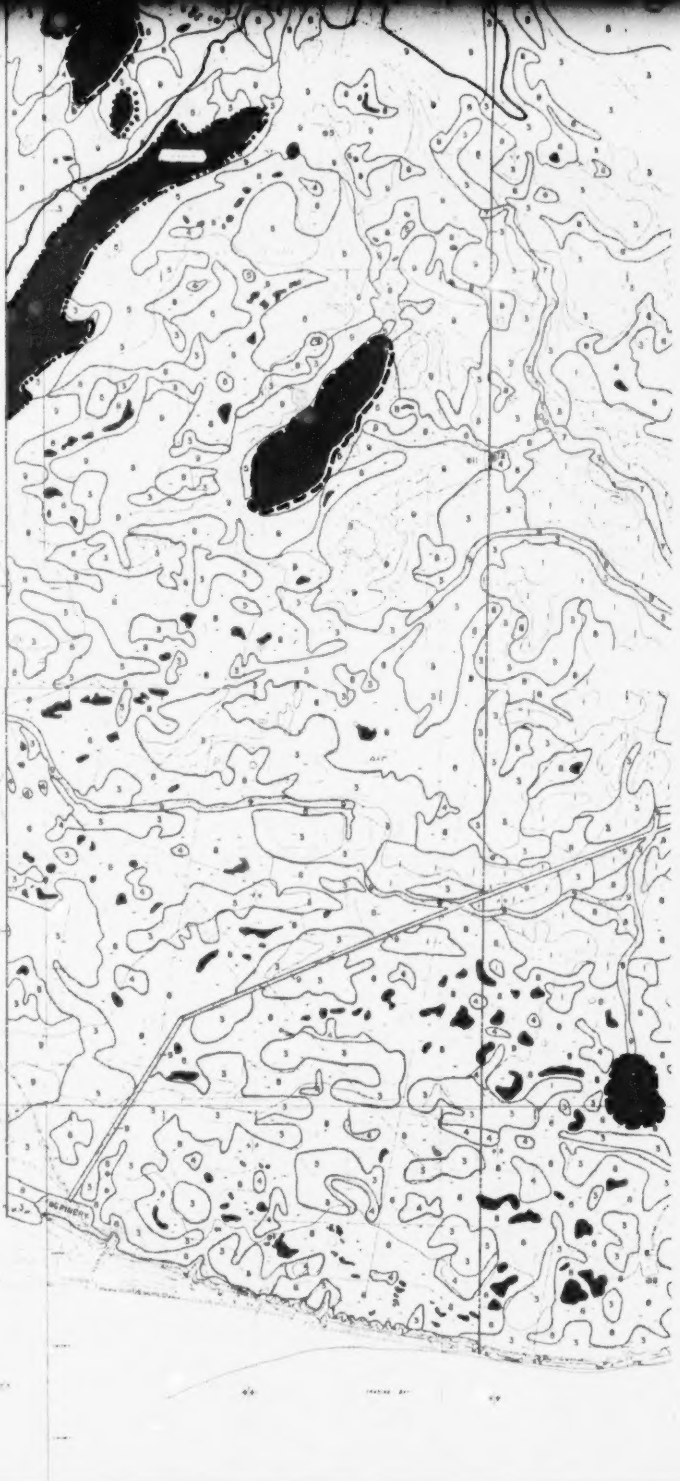
TRUMPETER SWAN POTENTIAL NESTING HABITAT IN STUDY AREA

Diamond Chuitna Environmental Impact Statement

FIGURE 3




500 FT. CONTOUR
LEGEND
HABITAT VALUE


LEGEND
HABITAT VALUE
HIGH
MEDIUM
LOW
SCALE IN FEET
0
2000
4000
8000

TRUMPETER SWAN
POTENTIAL NESTING
HABITAT IN PROJECT AREA

Diamond Chuitna Environmental Impact Statement	FIGURE 4

Three large lakes and 4 small lakes adjacent to the northern transportation corridor appear to provide some degree of nesting habitat for swans. The largest, Viapan Lake, would be classified as low quality due to its large size, 100 ha (250 ac). Tukallah Lake, on Threemile Creek, would be ranked medium primarily due to its size (39 ha [96 ac]) but it could be used by non-breeding swans for feeding. Four small unnamed lakes adjacent to this route would be classified as high quality for nesting swans.

None of these habitats would be directly affected by the road or conveyor system.

4.2.3 Mine and Mine Facilities

No suitable habitat for breeding swans was located in the mine area. The primary limiting factor is the low number of ice-free day due to the elevation of the mine area. Non-breeding swans may be seen in some open water areas of the mine site during the summer but use is likely to be insignificant.

4.2.4 Airport and Housing Facilities

No suitable swan habitat occurs within the Lone Creek site or the Threemile site.

The Congahbana Lake site is adjacent to high, medium, and low quality swan nesting habitat but direct habitat loss would be minor (about 2 ha [5 ac]) depending on the exact site. Indirect impacts from disturbance would be significantly greater than actual habitat loss.

4.2.5 Material Sites

No suitable swan habitat occurs within Sites 5 and 7.

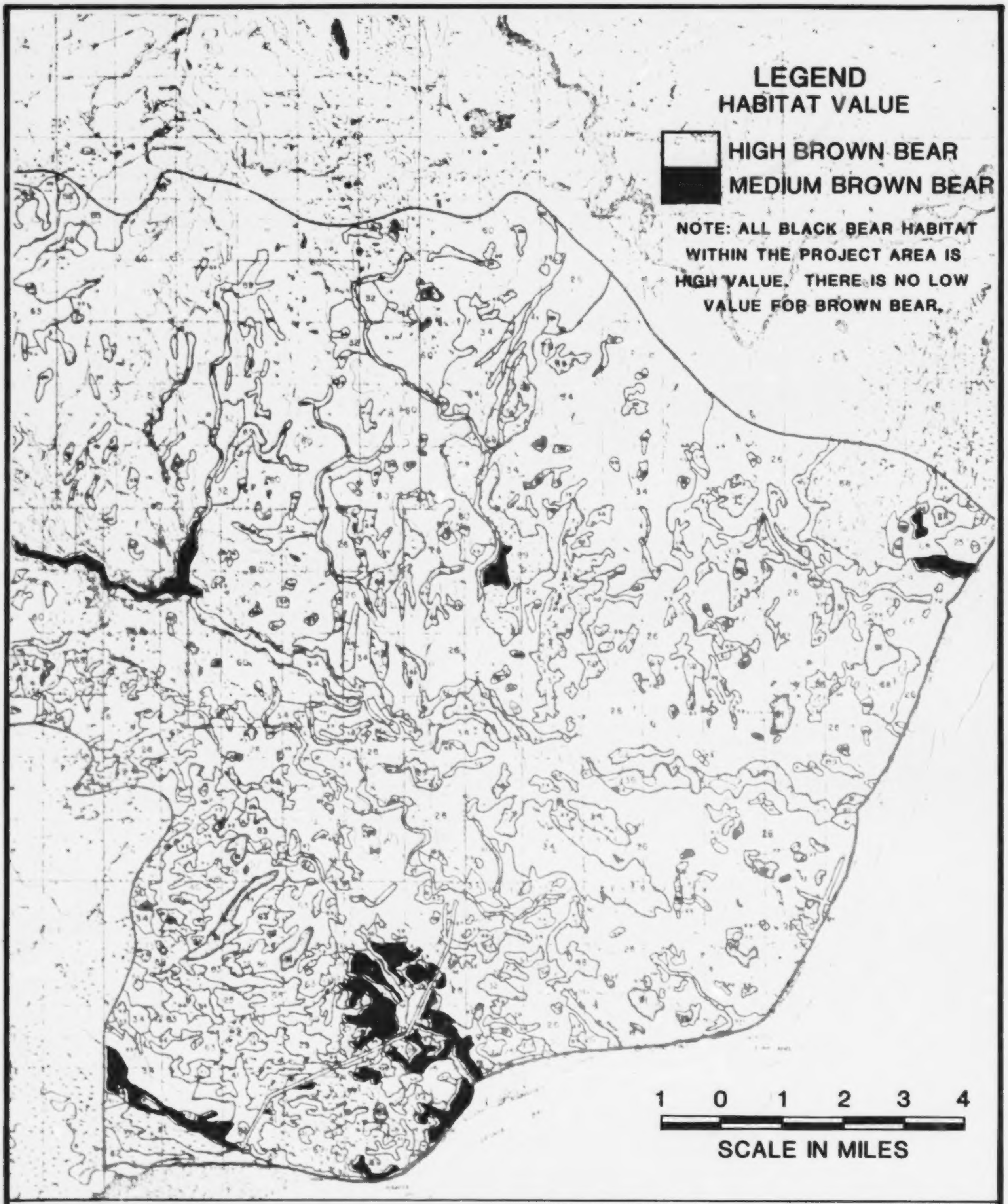
Site 8 is adjacent to medium quality swan habitat but no direct loss of habitat is expected from its development.

4.3 BLACK BEAR

None of the habitat types located within the project area were found to be limiting as far as availability of forage species. Cover was also found to be adequate throughout the project area with the exception of some grasslands west of Congahbuna Lake which are farther than 400 m (400 yd) from escape cover (Figure 5 and 6).

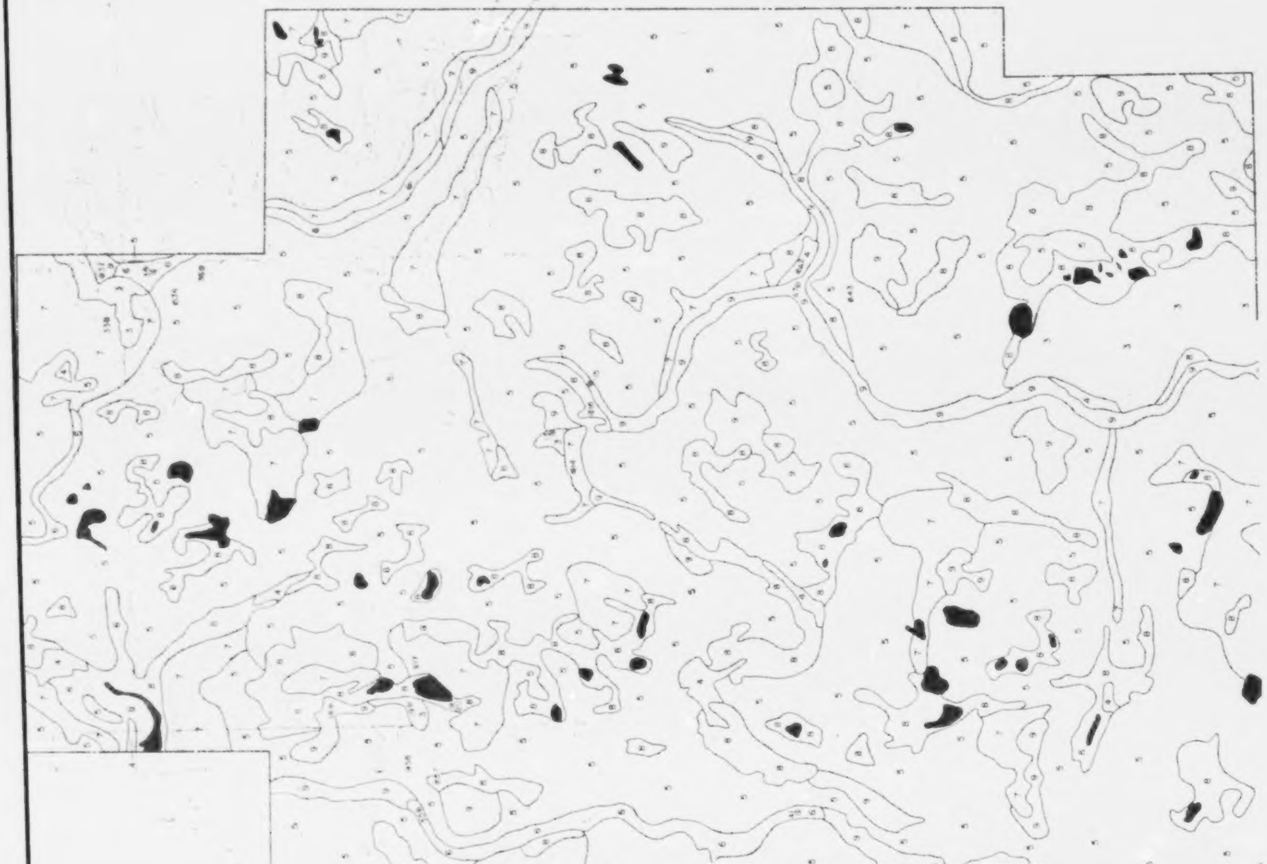
4.3.1 Port Areas

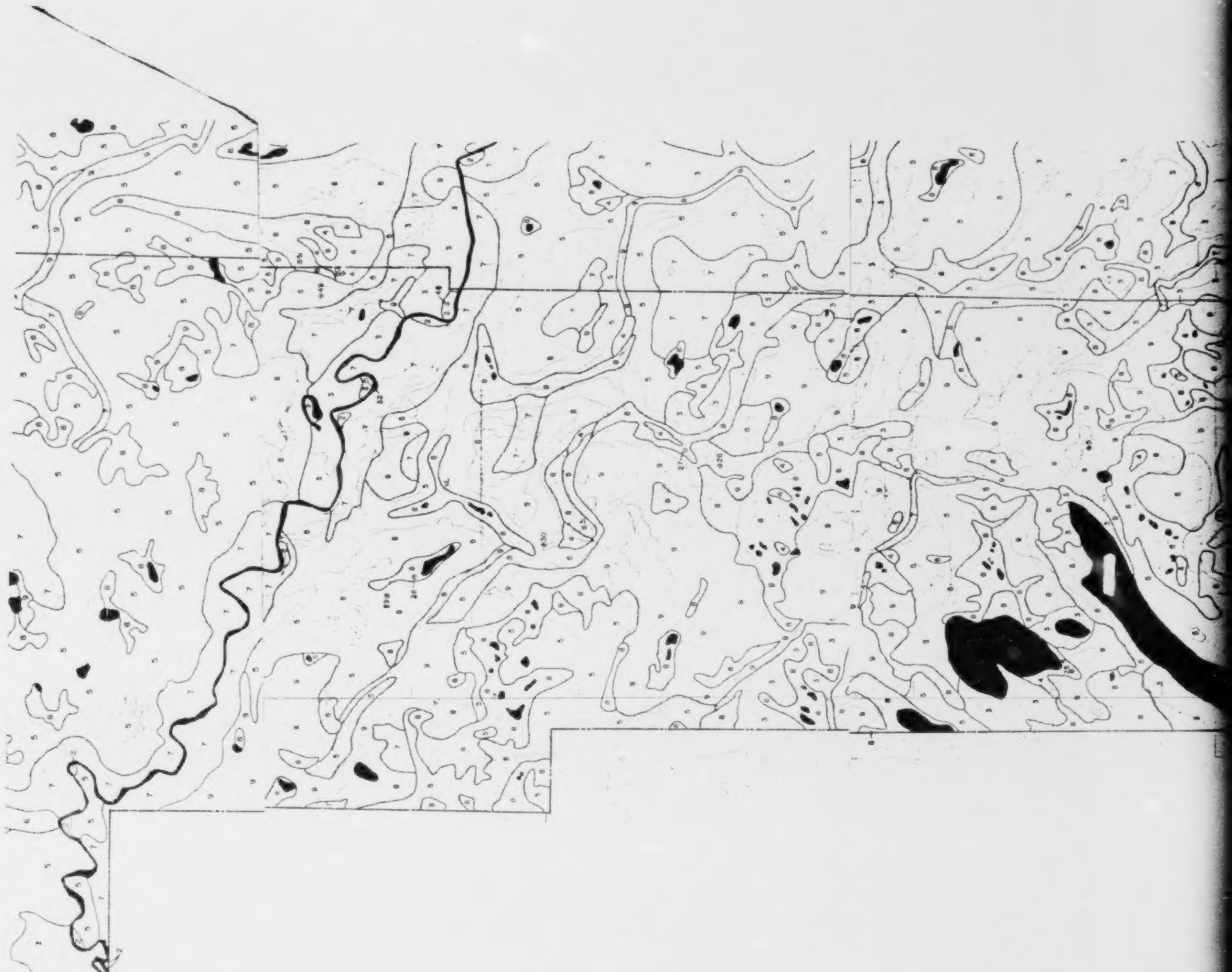
All habitat types within the proposed Granite Point port site were classified as having high value for black bear as were habitats within the Ladd site.

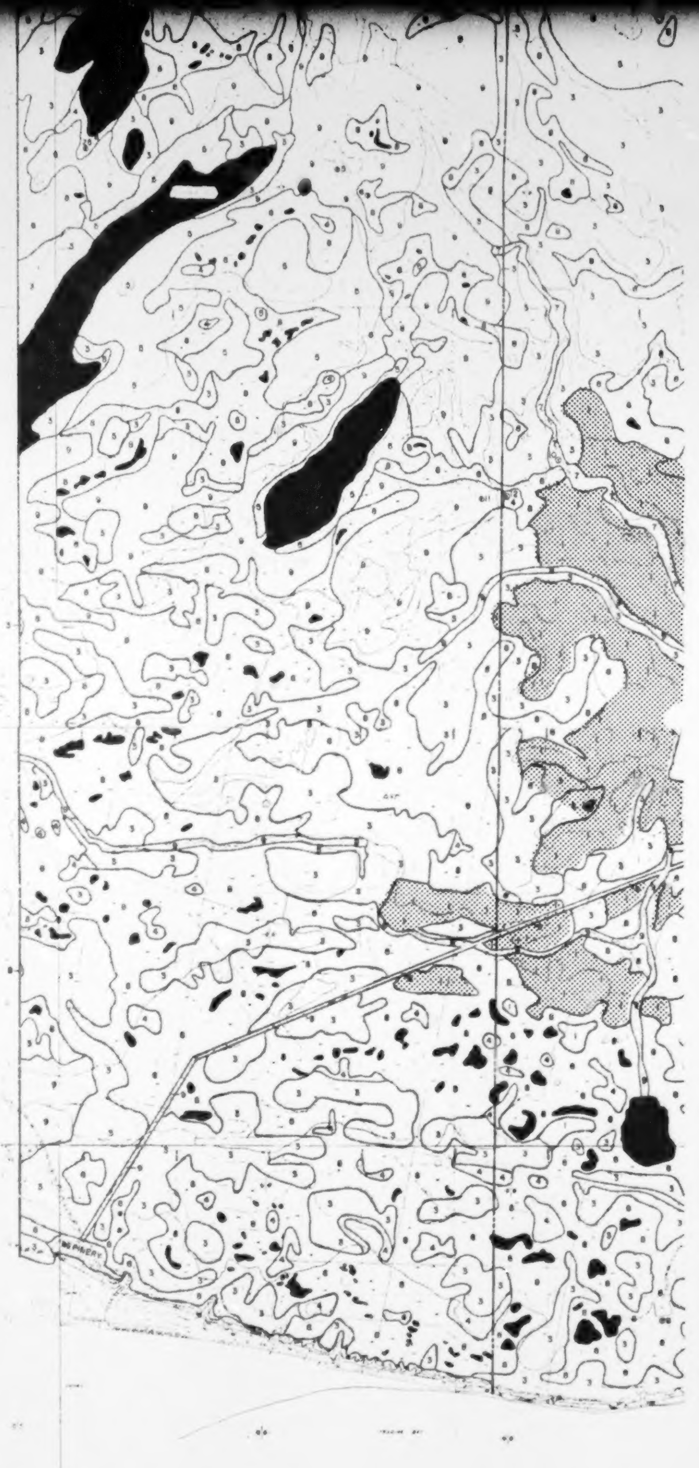

LEGEND
HABITAT VALUE
□ HIGH BROWN BEAR
■ MEDIUM BROWN BEAR
NOTE: ALL BLACK BEAR HABITAT WITHIN THE PROJECT AREA IS HIGH VALUE. THERE IS NO LOW VALUE FOR BROWN BEAR.
1 0 1 2 3 4
SCALE IN MILES

BLACK BEAR AND BROWN BEAR HABITAT IN STUDY AREA

Diamond Chuitna Environmental Impact Statement	FIGURE 5







LEGEND

HABITAT VALUE

- ☐ HIGH BROWN BEAR
- ▨ MEDIUM BROWN BEAR

NOTE: All black bear habitat within the project area is high value. There is no low value for brown bear.

SCALE IN FEET

0 2000 4000 8000

BLACK BEAR AND BROWN BEAR HABITAT IN PROJECT AREA

Diamond Chuitna Environmental Impact Statement	FIGURE 6

4.3.2 Transportation Corridors

All habitat types within the southern, eastern, and northern transportation corridors were classified as having high suitability for black bear.

4.3.3. Mine and Mine Facilities

All habitat types were classified as high value except for open water areas.

4.3.4 Airport and Housing Facilities

Within the area of the proposed Lone Creek site, all habitat which would be lost was classified as having high suitability for black bear. The same was true for the Congahbuna Lake site and Threemile site.

4.3.5 Material Sites

Material sites 5, 7, and 8 were all considered to contain high quality black bear habitat.

4.4 BROWN BEAR

The only habitat type within the project area which was found to be limiting for forage species and cover was the closed broadleaf forest/paper birch. This forest type has a relatively low percentage of berry-producing species and herbaceous forage species. Tree canopy cover is over 60 percent and the habitat was classified as having a medium overall suitability (Figures 5 and 6).

Bear densities are likely higher in the mine area since brown bears prefer open areas in the higher elevations.

4.4.1 Port Areas

All habitat types with the area to be developed at the proposed Granite Point and Ladd port sites were classified as having high overall habitat suitability for brown bear except for a small amount of open water habitat at the Ladd port site.

4.4.2 Transportation Corridors

Ninety-seven percent of the area to be developed within the southern corridor was classified as having a high overall suitability for brown bear. The remaining 3 percent was closed paper birch forest with a medium habitat suitability value.

All habitat types within the northern and eastern corridor were classified as high quality for brown bear.

4.4.3 Mine and Mine Facilities

All of the terrestrial habitat within the 30-year limit of the mine, the mine facilities, and overburden stock piles areas were considered to have a high overall habitat value for brown bears and provide good interspersion of habitat types. Open water areas, primarily pond habitats, were considered low quality habitat but were not delineated on the maps since all are relatively small. Total areas of aquatic habitat were approximately 24 ha (59 ac).

4.4.4 Airport and Housing Facilities

All habitats which would be lost in development of the Lone Creek site were classified as having a high overall suitability for brown bear, as were those in the Congahbuna Lake site and Threemile site.

4.4.5 Material Sites

All habitats within the three material sites were classified as high quality brown bear habitat.

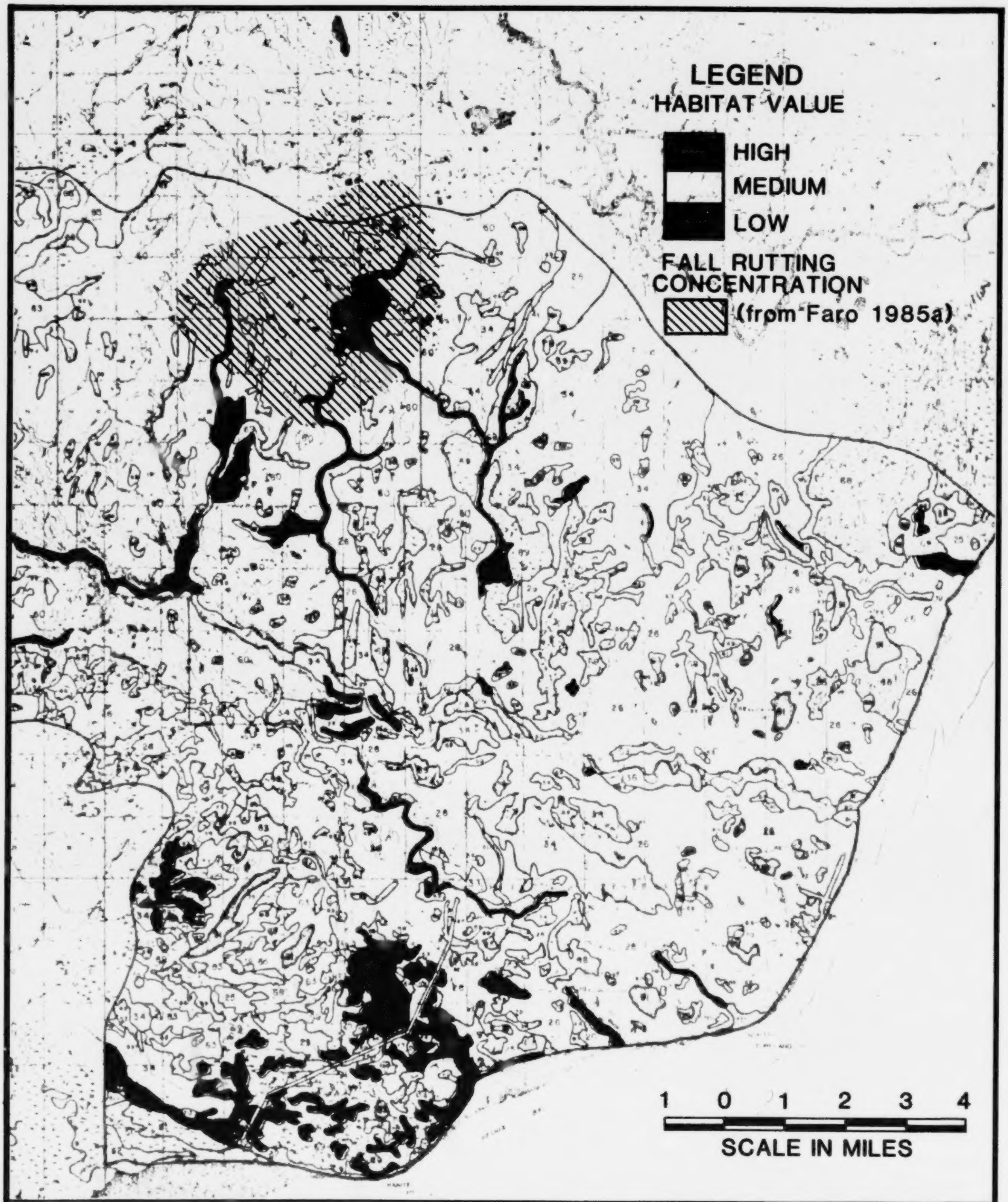
4.5 MOOSE

A higher degree of resolution was achievable in delineating quality of moose habitat in the project area than for the other species. This was largely due to the discrete habitat requirements of moose and the greater amount of available information on their habitat requirements.

Suitable spring/summer/fall range for moose is abundant throughout the project area and does not appear to be a limiting factor for the local population. Suitable habitat is found in low-lying areas which provide browse and herbaceous vegetation in the spring and early summer prior to the snow melt in the higher elevations. Once the upper areas are free of snow, moose can move up into extensive areas of high quality summer and fall range north of the Chuitna River (Figures 7 and 8).

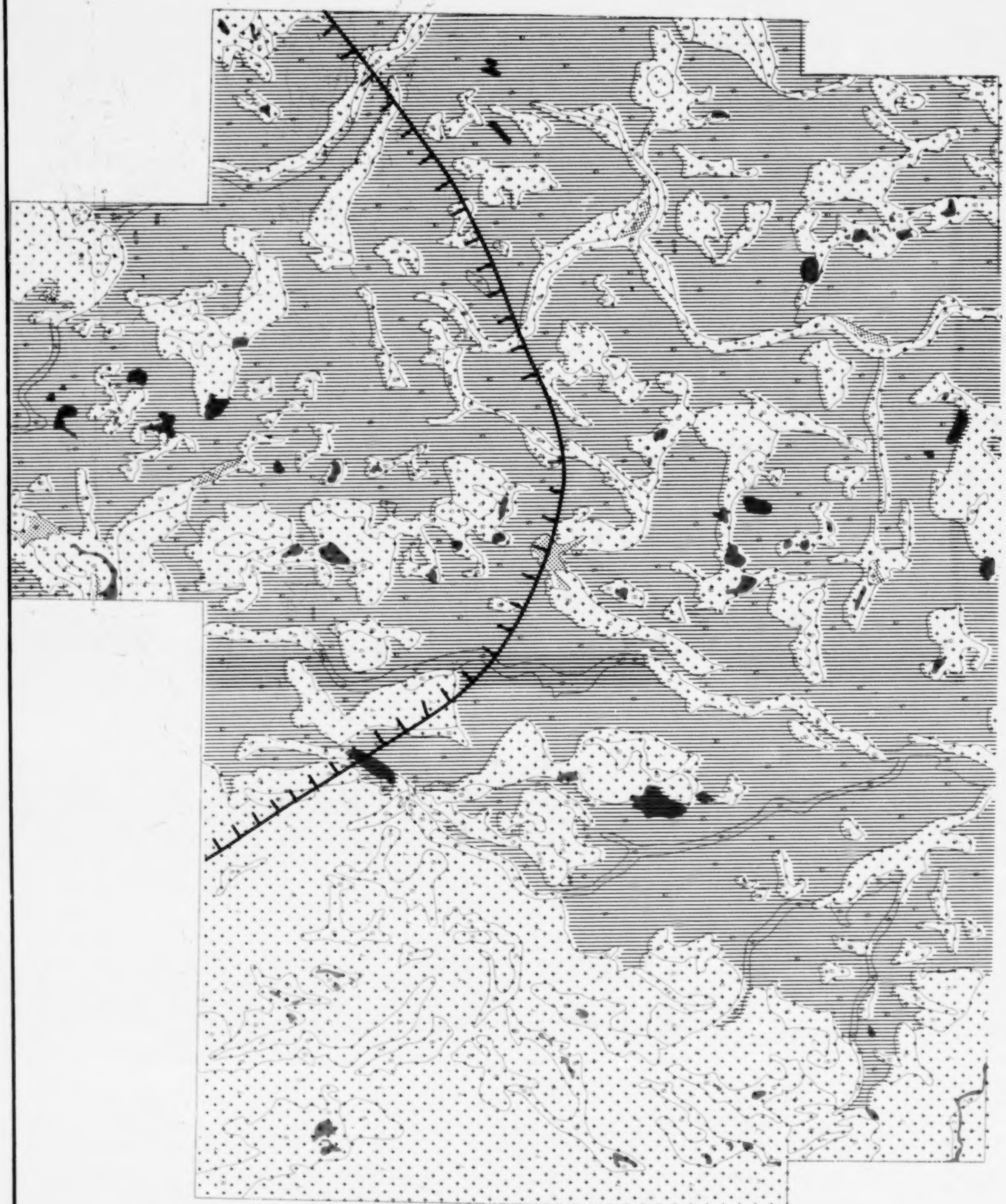
Moose winter range is restricted to areas where snow accumulation does not limit availability of browse or mobility. The 152 m (500 ft) contour was used in this area as the upper elevation limit. The distribution of moose winter range in the study area and project area is given in Figures 9 and 10.

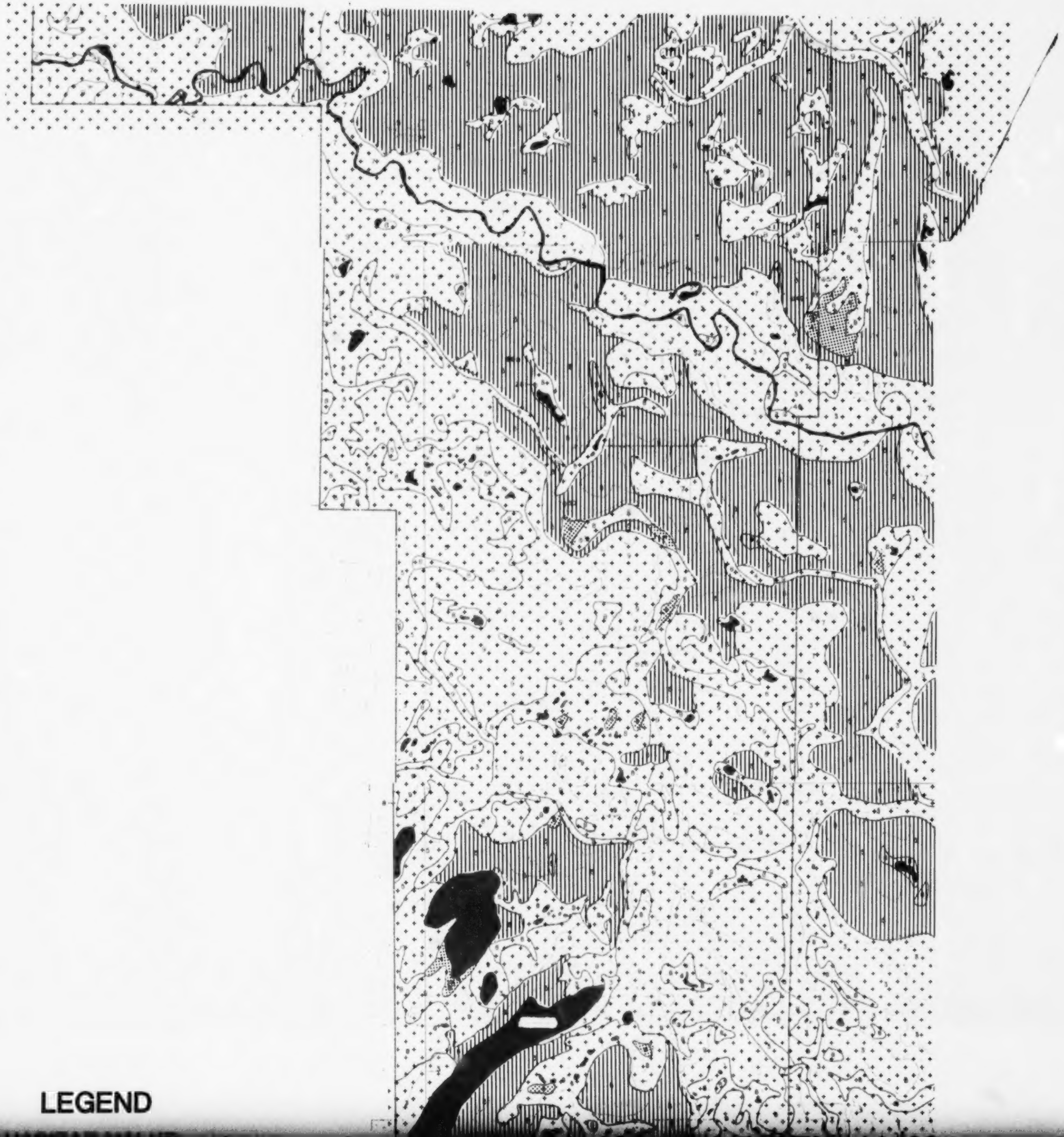
Some riparian areas very likely receive use disproportional to the size of the habitat areas. This may occur along both the Chuitna River and stream 2003.


LEGEND
HABITAT VALUE
HIGH
MEDIUM
LOW
FALL RUTTING CONCENTRATION
(from Faro 1985a)
1 0 1 2 3 4
SCALE IN MILES

MOOSE SPRING/SUMMER/FALL RANGE IN STUDY AREA

Diamond Chuitna Environmental Impact Statement | FIGURE 7





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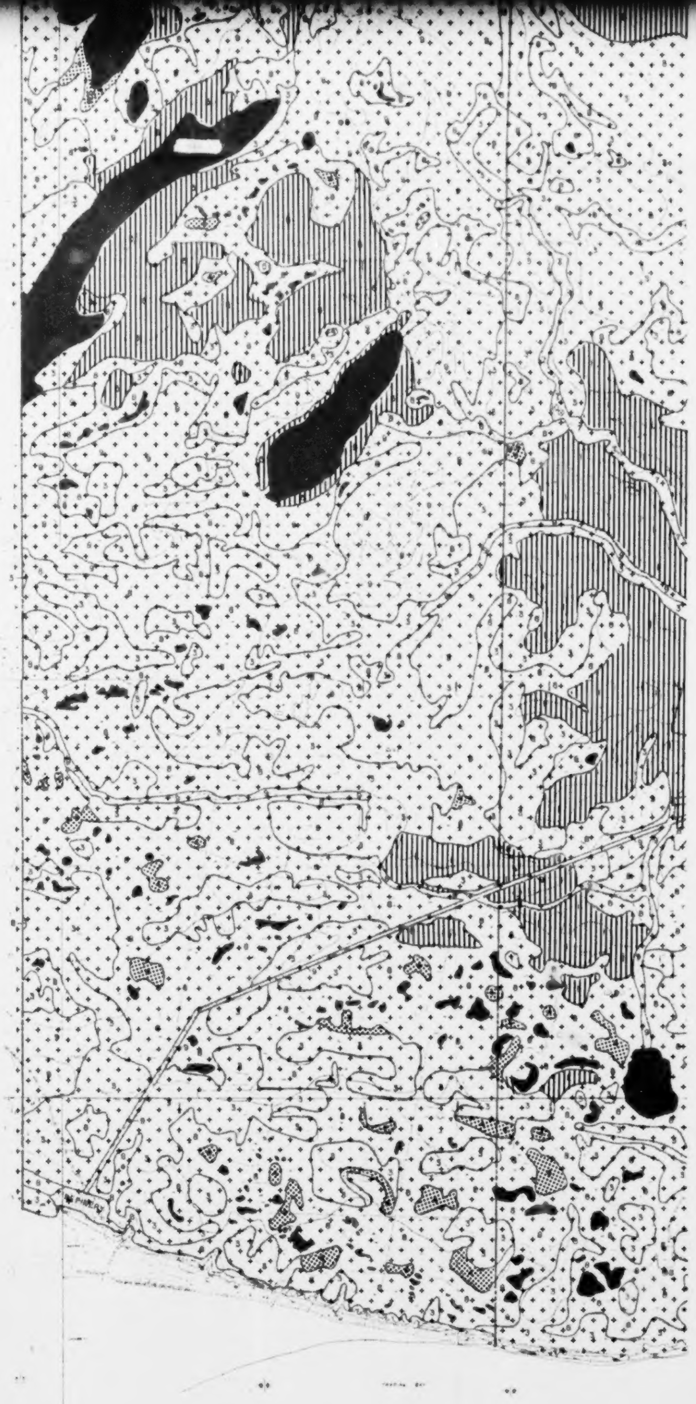
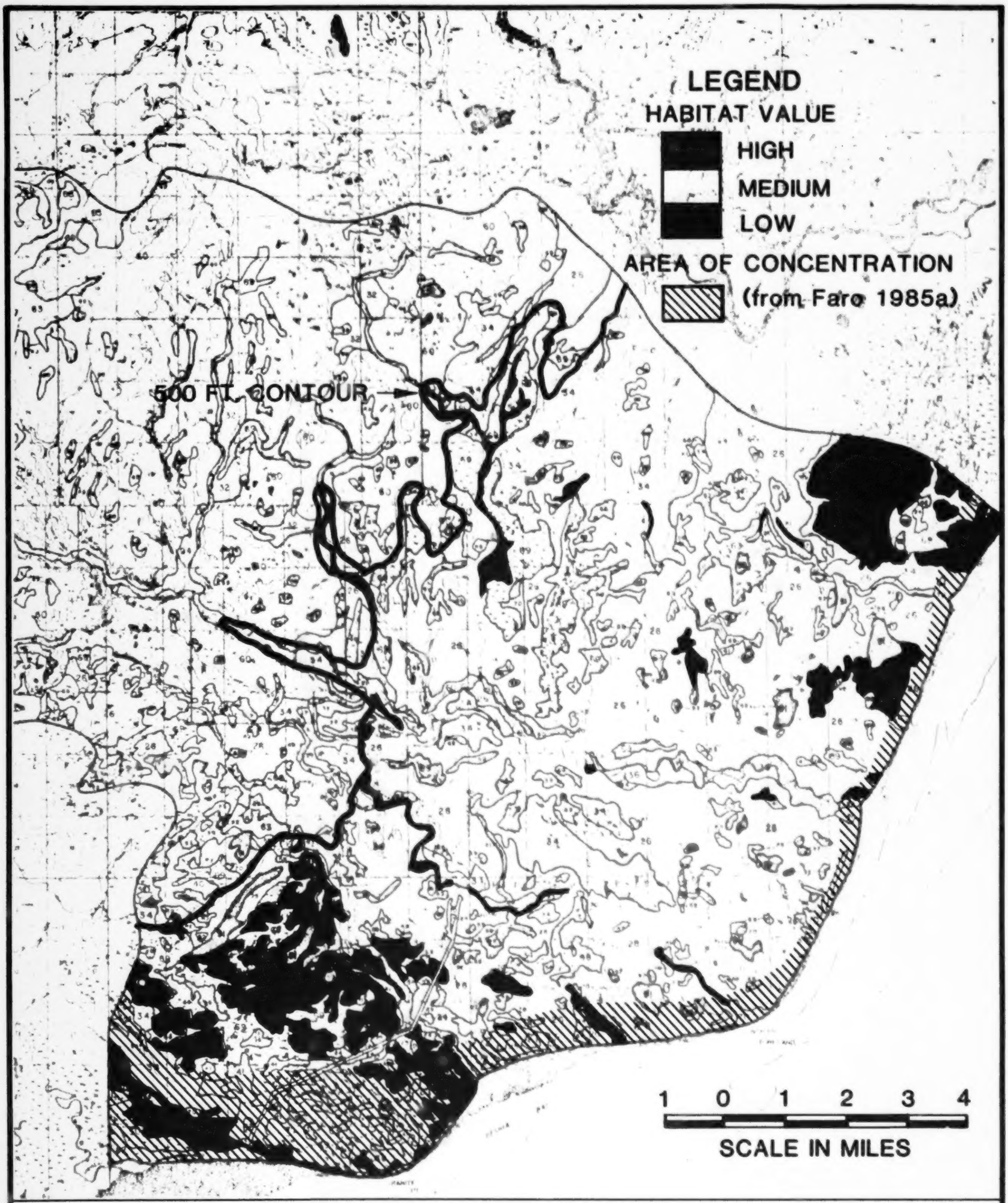

LEGEND
HABITAT VALUE
▥ HIGH
⁘ MEDIUM
▨ LOW
FALL RUTTING CONCENTRATION
(from Faro 1985a)
SCALE IN FEET
0
2000
4000
8000

MOOSE SPRING/SUMMER/FALL RANGE IN PROJECT AREA

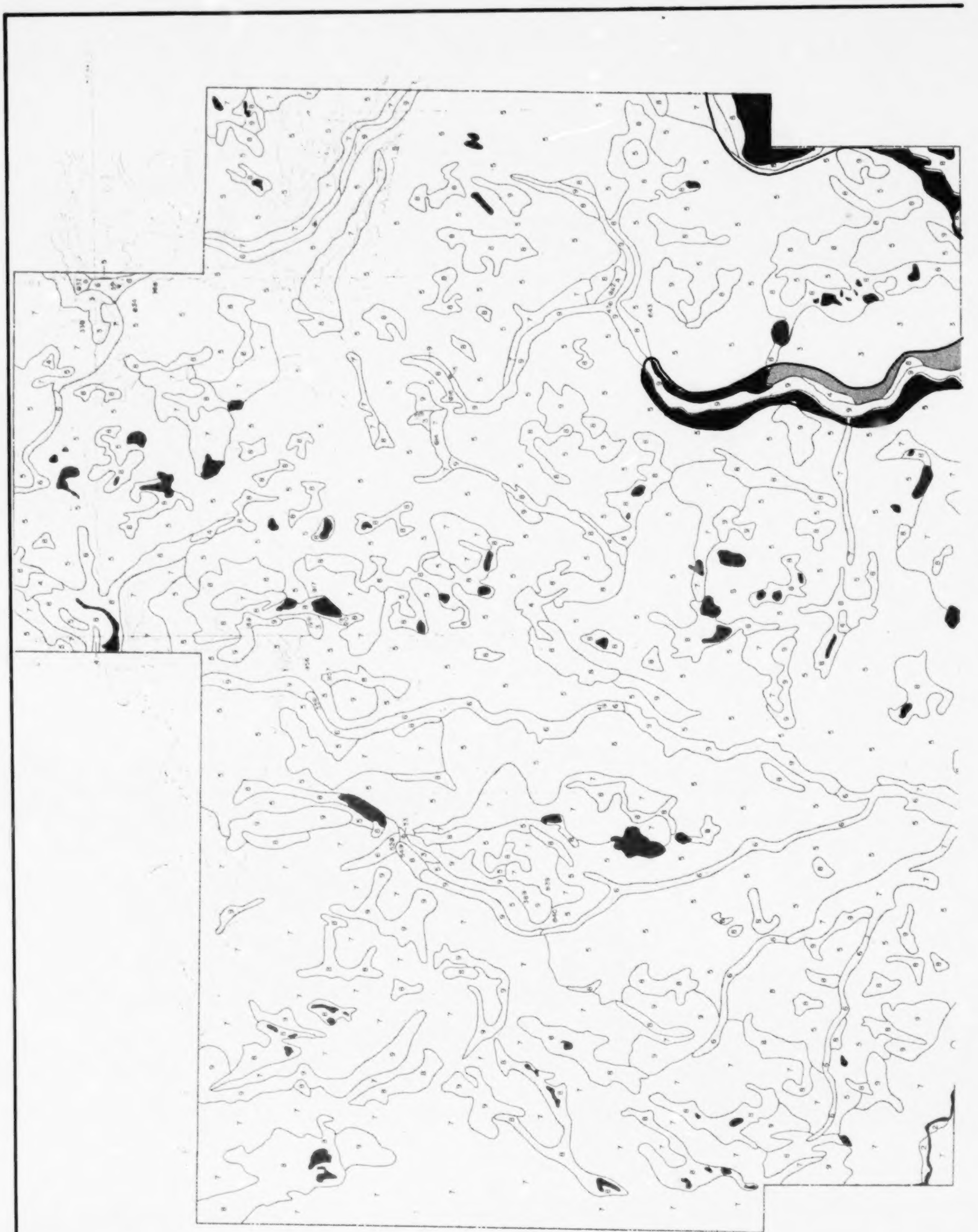
Diamond Chuitna Environmental Impact Statement	FIGURE 8

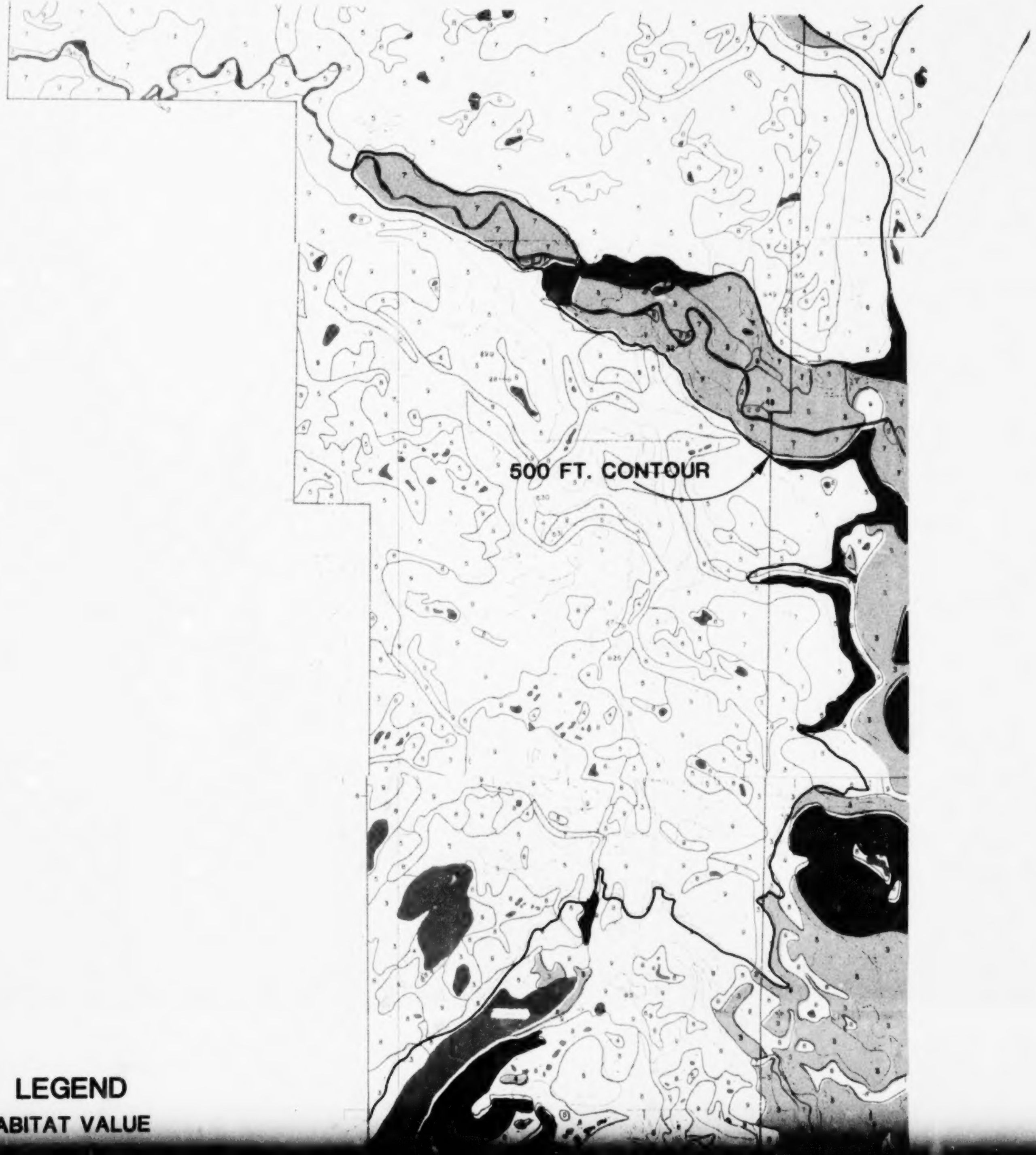

LEGEND
HABITAT VALUE
HIGH
MEDIUM
LOW
AREA OF CONCENTRATION
(from Faro 1985a)
500 FT. CONTOUR
1 0 1 2 3 4
SCALE IN MILES

MOOSE WINTER RANGE IN STUDY AREA

Diamond Chuitna Environmental Impact Statement

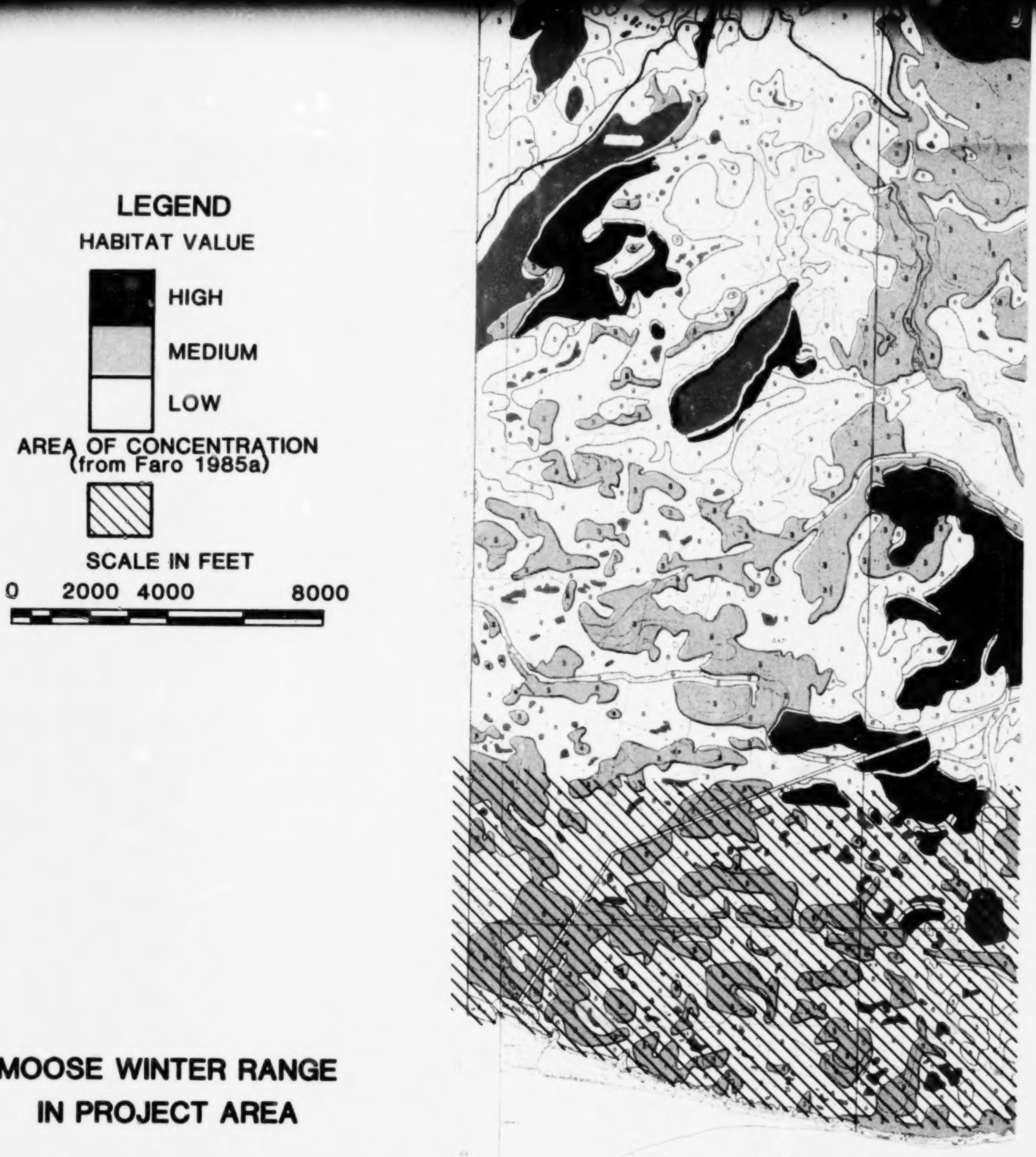
FIGURE 9




500 FT. CONTOUR

LEGEND

HABITAT VALUE


LEGEND
HABITAT VALUE
HIGH
MEDIUM
LOW
AREA OF CONCENTRATION
(from Faro 1985a)
SCALE IN FEET
0
2000
4000
8000

MOOSE WINTER RANGE
IN PROJECT AREA

Diamond Chuitna Environmental Impact Statement	FIGURE 10

4.5.1 Port Areas

No areas of high suitability for either spring/summer/fall range or winter range occurred within the area to be developed at the proposed Granite Point port site. These areas would be characterized as having moderate spring/summer/fall values and low to moderate winter range value. It should be noted, however, that patterns of actual moose distribution in the winter (Figure 10) indicate high utilization of the coastal area including Granite Point which contradicts the results of the habitat modelling to some extent. Forage value of the habitat, which would be directly disrupted by port facilities, is probably low but the snow conditions and mix of habitats within the coastal strip as a whole is evidently favorable.

All of the habitat types in the Ladd port site (except for 3 ha [7ac] of open water) were classified as medium spring/summer/fall habitat. Only 6 ha (16 ac) were considered as having low value for winter range; the remainder received a medium rating. Actual utilization by moose in winter is probably high due to its proximity to the coast.

4.5.2 Transportation Corridor

The southern transportation system would affect a wide range of moose habitat. Moderate quality spring/summer/fall habitat would be the major type lost (67 percent) followed by high quality habitat (32 percent).

Winter range affected by the haul road and conveyor would largely be areas of low suitability (90 percent). High quality moose winter range lost to development amounts to one percent of the total lost along the corridor. Large areas of high suitability occur west of the proposed haul road.

The eastern corridor alignment would affect medium quality spring/summer/fall habitat to the greatest degree (93 percent) and high quality range to the lesser extent (7 percent).

No significant high quality winter range would be affected by the eastern route. Fifty-four percent of the route was classified as medium quality and 26 percent was low. Approximately 35 percent of the route would not be used due to its elevation (above 500 ft).

The northern corridor alignment would affect a relatively small amount of high quality moose spring/summer/fall habitat (5 ha [12 ac]) located along Lone Creek and Tributary 2003. These habitats are also considered high quality for winter range, but the high elevation (approximately 152 m [500 ft]) would likely preclude their use by moose. Most of the habitat affected by this route alignment

(93 percent) is of medium quality for moose spring/summer/ fall use.

Forty-four percent of this corridor (32 ha [79 ac]) is of medium moose winter range with another 30 percent being classified as low quality.

4.5.3 Mine and Mine Facilities

Terrestrial habitats within the 30-year mine limit area are predominantly high quality moose spring/summer/fall range (67 percent) with most of the remaining area being of moderate quality. Less than one percent was classified as having low suitability. Since winter range was defined as areas below 152 m (500 ft) elevation, this area would contain no moose winter range. The possibility does exist that moose could use some of this area in winters of low snowfall or in early winter before significant snow accumulation. However, its significance as winter range would not be great over time.

4.5.4 Airport and Housing Facilities

A majority (86 percent) of the habitat lost in developing the Lone Creek site is classified as having a high overall habitat suitability for spring/summer/fall range but was not considered suitable for winter range due to the elevation. The remaining areas were considered of medium quality for moose summer range.

The moose habitat at the Congahbuna Lake site is predominately medium quality spring/summer/fall habitat but there is a significant amount of high quality habitat (34 percent). This area lies near the 152 m (500 ft) elevation so it is questionable whether moose are able to use the area in typical winters.

All of the habitat at the Threemile site is classified as being of medium quality for both moose spring/summer/fall habitat and for moose winter range.

4.5.5 Material Sites

A majority of habitats within material sites #5 and #8 provide high quality spring/summer/fall range for moose. Site #7 contains all high quality range. No low quality habitat was found within any of the areas proposed for use.

Sites #5 and #8 are too high in elevation to provide winter range in normal years. Site #7 is located on a south-facing slope above Nikolai Creek within a long band of high quality winter range. All of the habitat types at this site were characterized as high quality winter range.

4.6 COMPARISON OF PRE- AND POSTMINING HABITAT VALUE

4.6.1 Vegetation Types

The four major vegetation types which presently occur within the 10-year mine limit and overburden stockpile areas would be replaced by seven vegetation types during the reclamation process. Three of these vegetation types would be wooded types, only one of which, the mixed woodland, is presently found within the project area. These include: mixed woodland/spruce-birch, spruce woodland, and birch woodland. The mixed woodland/spruce-birch would be the most extensive type reestablished in the disturbed areas (Table 11). Smaller amounts of pure spruce stands and pure birch stands would replace some of the natural mixed woodland.

Three shrub types would be developed to replace the low shrub/sweetgale grass fen type. These include one natural type, closed tall shrub scrub alder, and two artificial types, open-tall shrub scrub/willow and open shrub scrub/ mixed shrub.

The areas of vegetation types removed and replacement vegetation types are given in Table 11.

4.6.2 Habitat Values

The value of these replacement vegetation types for wildlife species would vary considerably depending upon several factors such as success of reestablishment, growth rates of the trees and shrubs, annual forage production and rates of natural introductions of native species. Habitat values would likely increase over time as the communities mature.

Since a major factor in determining habitat quality involves quantity of available forage (i.e., percent cover of berry-producing species) and this data is not available for the replacement vegetation types, the types cannot be evaluated using the criteria used for the overall habitat analysis. Only subjective values can be assigned based on plant species composition and professional judgment.

Sandhill cranes and trumpeter swans would not be affected by the mine development so black bear, brown bear and moose habitat only are discussed in this analysis.

4.6.3 Black Bear

The overall habitat value of all the revegetation community types would likely be medium due to the lack of diversity of succulent herbaceous understory species and berry-producing species, especially during the initial years after reclamation. Lack of mature trees or dense shrub

Table 11

COMPARISON OF AREAS OF HABITAT LOST TO MINING ACTIVITIES AND REPLACEMENT HABITAT

Vegetation Types[1]	Premining Habitat (hectares [acres])	Replacement Habitat (hectares [acres])
Mixed Woodland/Spruce Birch	398 (984)	222 (549)
Spruce Woodland	—	55 (137)
Birch Woodland	—	83 (206)
Mesic Graminoid Herbaceous/ Bluejoint Herb	34 (84)	125 (310)
Open Low Shrub Scrub/ Sweetgale-grass Fen	117 (291)	0
Open Tall Shrub Scrub/ Willow	—	24 (60)
Closed Tall Shrub Scrub/ Alder	105 (262)	104 (259)
Open Shrub Scrub/Mixed Shrub-grass	—	47 (118)
Open Water	7 (18)	0
Total	662 (1639)	660 (1639)

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[1] It should be noted that premining and postmining habitat types that have the same name do not necessarily have the same composition or value to wildlife.

cover for escape may inhibit use until communities mature. Relative values of each replacement habitat are given in Table 12.

4.6.4 Brown Bear

Brown bears are a more wide-ranging species than black bears. Therefore, the effect of limited habitat on brown bear may not be as significant since the bears can compensate by using more suitable habitat outside the mine area.

Lack of diversity of forb and berry-producing species may decrease the quality of replacement vegetation types. However, since grasses would be a major component of most all types, this may compensate for the deficiency.

Since brown bears are primarily an open country species, habitat values of wooded types would decrease as they mature and develop a closed canopy.

4.6.5 Moose (spring/summer/fall range)

Snow depth during the winter would limit the mine area for moose winter range so use would occur during spring through fall.

The major habitat parameters determining the suitability of a vegetation type for moose during this time period are browse quality and quantity, availability of cover, and forb production.

Browse quality should be good in all woodland and shrub types with the possible exception of closed tall schrub scrub/alder but browse quantities are speculative at this point. The open tall shrub scrub/willow would be highest in habitat value; forb production would likely be low. In all, very few forbs would be introduced. Cover would likely not be a limiting factor affecting overall habitat quality.

4.6.6 Overall Habitat Quality

Surface areas of habitats according to value for key species are presented in Table 13 for both the premining and postreclamation condition using the assumptions developed above. Quality of the replacement habitat for wildlife within the 10-year mine limit would actually be highly dependent on the success of the reclamation and the succession of the new communities. It is suspected that replacement communities would provide lower quality habitat than the existing community types but would increase in value over time as the stands mature and resemble more closely premining diversity and forage species composition.

Table 12

RELATIVE HABITAT VALUE FOR REPLACEMENT HABITAT FOR BLACK BEAR, BROWN BEAR AND MOOSE

Replacement Community Type	Species Black Bear	 Brown Bear	 Moose
Mixed Woodland/ Spruce-Birch	Medium	High	Medium
Spruce Woodland	Medium	High	Medium
Birch Woodland	Medium	High	Medium
Mesic Graminoid Herbaceous/ Bluejoint Herb	Medium	High	Medium
Open Tall Shrub Scrub Willow	Medium	High	High
Closed Tall Shrub Scrub Alder	Medium	High	Low
Open Shrub Scrub/ Mixed Shrubs	Medium	High	High

Table 13

COMPARISON OF PREMINING AND POSTMINING HABITAT VALUES FOR EVALUATION SPECIES

Evaluation Species	Habitat Value	Premining Habitat (Hectares [acres])	Postmining Habitat (Hectares [acres])
Black Bear	High	660 (1639)	0
	Med	0	660 (1639)
	Low	0	0
Brown Bear	High	660 (1639)	660 (1639)
	Med	0	0
	Low	0	0
Moose Summer/Fall	High	398 (984)	71 (178)
	Med	257 (637)	485 (1202)
	Low	0	104 (259)

5.0 DISCUSSION

The terrestrial habitats of the Beluga area exhibit very high diversity and interspersion. The small amount of low quality habitat found for most species is an indication of the quality of this area. None of the habitat areas affected by the proposed development of the various components were classified as "very high" or critical to the species considered.

From the standpoint of direct habitat loss and quality of habitat, the southern transportation corridor to a port site at Granite Point and the housing facility and airport site at Lone Creek would produce the least adverse impact to wildlife habitat. The use of material site #5 would result in a smaller loss of habitat (especially for moose) than either #7 or #8. The Lone Ridge site was not considered in this analysis due to the remote possibility of its development.

The differences in direct habitat loss between alternatives is not significant compared to the large amount of habitat which would be lost within the 30-year mine limit.

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Appendix B

U.S. Fish and Wildlife Service Mitigation Statement

United States Department of the Interior
Western Alaska Ecological Services
Sunshine Plaza, Suite 2B
411 W. 4th Ave.
Anchorage, Alaska 99501

IN REPLY REFER TO:
WAES

16 SEP 1985

Mr. William M. Riley
EIS Project Officer
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

Re: Diamond Chuitna Coal Project
U.S. Fish and Wildlife Service (FWS)
Mitigation Policy Statement

Dear Mr. Riley:

As a part of overall planning and participation in the subject project, the FWS has prepared a mitigation statement for your information and guidance. This document, in accordance with the Fish and Wildlife Service Mitigation Policy (FR Vol. 46 No. 15, 23 January 1981), establishes fish and wildlife evaluation species, resource categories of habitat and mitigation goals.

By establishing project and species habitat specific mitigation goals, the FWS intends to protect and conserve the most important and valuable fish and wildlife resources while facilitating balanced development of the nation's natural resources.

Sincerely

Robert Bowker

Field Supervisor

Enclosure

cc: Don McKay, ADF&G, Anchorage
Jim Hemming, Dames & Moore, Anchorage
Brad Smith, NMFS, Anchorage
Rich Sumner, EPA, Anchorage
Sam Dunaway, DNR, Anchorage
Carol Gorbics, CE, Anchorage
Dan Wilkerson, DEC, Anchorage
Luke Franklin, Diamond Chuitna, Anchorage

Diamond Chuitna Coal Project

Mitigation Statement

Under the Fish and Wildlife Coordination Act (FWCA) and the National Environmental Policy Act (NEPA) regulations, the Fish and Wildlife Service (FWS) has responsibilities to insure that project-related losses to fish and wildlife resources are identified and mitigated. As part of our participation in the planning and evaluation of the Diamond Chuitna Coal Project, the following mitigation statement has been developed in accordance with the FWS Mitigation Policy (FR Vol. 46, No. 15, 23 January 1981) and in consultation with the National Marine Fisheries Service (NMFS), the Environmental Protection Agency (EPA), and the Alaska Department of Fish and Game (ADF&G). It has been prepared to provide guidance for evaluating and mitigating impacts of the proposed project to fish and wildlife.

The Diamond Chuitna Coal Project mitigation statement has been developed by first selecting fish and wildlife habitats from among the full range of habitats occurring within the area to be impacted by both direct and indirect perturbations. These were chosen either because they represent resources which are most characteristic of the area or because FWS has mandated responsibilities for them. By narrowing the scope in this way, the analysis can focus on areas where significant changes are most likely to occur and not be unduly burdened by inclusion of areas with low fish and wildlife value.

Evaluation species, which function as indicators of habitat quality and quantity, were chosen. Selection of evaluation species has an important role in determining the extent and type of mitigation to achieve. A combination of two sets of criteria is typically used to choose species for this purpose. The first is to pick species with high public interest, subsistence, or economic values, and the second is to select species which use habitats of significant ecological value.

Fish and wildlife habitats were then assigned to one of the four Resource Categories delineated in the FWS Mitigation Policy (Table 1). Designation of habitat into Resource Categories ensures that the level of mitigation recommended is consistent with the value of that habitat and its relative abundance on a regional or national basis.

Eleven species have been selected as the basis for evaluating impacts and formulating mitigation requirements for the Diamond Chuitna Coal Project. Available information indicates that moderate to high value habitat for each evaluation species is found within the project area but that none is considered unique or irreplaceable. Therefore, the habitats for all species have been assigned to Resource Categories 2, 3 or 4.

The determination of the relative scarcity or abundance of habitat from the national perspective is based upon (1) the historical range and habitat quality and (2) the current status of that habitat. A significant reduction in either the extent or quality of habitat for an evaluation species indicates that it is scarce or becoming scarce, while maintenance of historical quantity and quality is the basis for considering it abundant.

Specific ways to achieve the mitigation goal for Resource Category 2 when loss of habitat value is unavoidable include:

> (1) physical modification of replacement habitat to convert it to the same type which was lost; (2) restoration or rehabilitation of previously altered habitat; (3) increased management of similar replacement habitat so that the in-kind value of lost habitat is replaced; or (4) a combination of these measures. By replacing habitat value losses with similar habitat values, populations of species associated with that habitat may remain relatively stable in the area over time.[1]

The mitigation goal of in-kind replacement of lost habitat, however, cannot always be achieved. When opposition to a project on that basis alone is not warranted, deviation from this goal may be appropriate. Two such instances occur when either different habitats and species available for replacement are determined to be of greater value than those lost, or when in-kind replacement is not physically or biologically attainable in the ecoregion. In either case, replacement involving different habitat kinds may be recommended, provided that the total value of the lost habitat is compensated.

For Resource Category 3, in-kind replacement of lost habitat is preferred, though not always possible. Substituting different habitats, or increasing management of different habitats so that the value of the lost habitat is replaced, may be ways of achieving the planning goal of no net loss of habitat value.

The planning goal associated with Resource Category 4 is to minimize the loss of habitat value. Resource Category 4 areas, possessing relatively low habitat values, have the greatest potential for improvement; their enhancement may be used to mitigate losses in resource categories 2 and 3.

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[1] FWS Mitigation Policy.

Table 1. Resource Categories and mitigation planning goals.*

Resource Category	Designation Criteria	Mitigation Planning Goal
1	Habitat to be impacted is of high value for evaluation species and is unique and irreplaceable on a national basis or in the ecoregion section.	No loss of existing habitat value.
2	Habitat to be impacted is of high value for evaluation species and is relatively scarce or becoming scarce on a national basis or in the ecoregion section.	No net loss of in-kind habitat value.
3	Habitat to be impacted is of high to medium value for evaluation species and is relatively abundant on a national basis.	No net loss of habitat value while minimizing loss of in-kind habitat value.
4	Habitat to be impacted is of medium to low value for evaluation species.	Minimize loss of habitat value.

* FWS Mitigation Policy (FR Vol. 46, No. 15, 23 January 1981).

Table 2. Evaluation species for the Diamond Chuitna Coal Project and Resource Category designations for associated habitat.

Common Name	Resource Categories of Associated Habitat
Sandhill crane	4
Trumpeter swan	2
Black bear	3
Brown bear	2
Moose	2/3*
Beaver	4
Belukha	3
Chinook salmon	2/3/4*
Coho salmon	2
Pink salmon	3/4*
Rainbow trout	3

*See text

Project Evaluation Species

1. Sandhill crane (*Grus canadensis*). The lesser sandhill crane, considered common on a national basis, nests throughout Alaska, as well as in northern Canada and the northeastern Soviet Union. Although uncommon in the Diamond Chuitna project area, cranes are abundant in Cook Inlet as summer breeders and as spring and fall migrants. Cranes nesting in Cook Inlet form part of the Pacific Flyway population.

Human use of Pacific Flyway cranes is primarily nonconsumptive (birdwatching and photography), although in Alaska cranes are hunted for sport and subsistence. Over 30 percent of the cranes harvested for sport in Alaska in 1982 were taken in Cook Inlet (Campbell 1984). Subsistence hunting, which occurs predominantly in the Yukon-Kuskokwim Delta, accounts for approximately 1000 birds every year (FWS 1983).

Boise (1977) found that "human activity above minimal levels appears incompatible with crane nesting, as reflected in nest desertion as a result of human activity. Loss of nesting habitat as a result of land development is a further threat to the population's stability."

Preferred nesting habitats are sedge/grass meadow and wet marsh tundra, with an unobstructed view on all sides and with standing water nearby (Konkel *et al*. 1980).

Because nesting has not been documented in the project area and because significantly better habitat can be found to the southwest and northeast (EPA 1985), the suitable crane habitat in the coastal reaches of the Diamond Chuitna project area is placed in Resource Category 4 (Tables 1 and 2).

2. Trumpeter swan (*Olor buccinator*). Nonconsumptive interest in this species is high. Recently close to extinction, the trumpeter swan is still very rare in the conterminous 48 states. Historically, swans were found throughout much of northcentral North America in summer and along the Mississippi River and the Atlantic, Pacific, and Gulf coasts in winter (Bartonek 1983). Their favorable response to management efforts and perhaps an amelioration in climate has made possible their removal from the Threatened and Endangered Species List. The 1980 census indicated that nearly 8,000 swans, or 90 percent of the world population, were on breeding grounds in Alaska (King and Conant 1981).

Swans nest and rear in the southern half of the state, in wetlands and shallow ponds and lakes surrounded by emergent vegetation. They are common migrants and breeders in Cook Inlet. The mine permit area contains one active nest, and the coastal reaches of the transportation corridors and ports fall within a broad band of nesting habitat. Trumpeter swan surveys in Cook Inlet indicate that the population is expanding (EPA 1985).

Trumpeter swans are very susceptible to disturbance while nesting and rearing cygnets, and the species is being excluded by recreational developments on large lakes formerly used for nesting (Timm and Woject 1978). Approximatey two thirds of all trumpeter swan habitat in Alaska is in private ownership and therefore potentially available for development. A key objective of the North American Management Plan for Trumpeter Swans is to "Preserve all current wintering and breeding trumpeter swan habitat through whatever means necessary to protect habitat integrity." Given this objective and the fact that the Alaskan population is expanding, all potential and actual nesting habitat in the Diamond Chuitna project area is placed in Resource Category 2.

3. Black bear (Ursus americanus). This species is widespread throughout North America; black bear habitat is considered abundant on both a national and regional basis. Human interest in black bears has always been high, particularly in terms of hunting, photography and wildlife observation. Black bears would be impacted by coal development through habitat elimination, reduction in food supply, increased human access and hunting.

Seasonal availability of foods strongly influences the distribution of black bears in an area. Bears move from spring green-up areas to summer salmon streams, and then to berry-producing shrubland in late summer or early fall. Black bears are common throughout the project area but prefer open, mixed hardwood/spruce forests at the lower elevations and do not range far from cover to feed. None of the habitats in the project area were found to be limiting in terms of food or cover and all were classified as being of high value for black bears (EPA 1985).

Because the study area provides good habitat and supports a large population of black bears, and because habitat in Cook Inlet is abundant, habitat in the project area is placed in Resource Category 3.

4. Brown bear (Ursus arctos). This species is considered a valuable big game animal and attracts numerous resident and nonresident hunters. It also elicits considerable nonconsumptive interest from photographers and wildlife observers. Although not considered threatened or endangered in Alaska, the brown bear is listed as threatened under the Endangered Species Act in the 48 conterminous states. As such, it is a species of national interest, whose habitat has been significantly reduced in extent and quality. It is considered scarce from the national perspective although it is relatively common in the project area.

Brown bears are distributed throughout the project area. They prefer open habitats and are most common in the upland shrub and tundra communities (EPA 1985). Brown bears have extensive home ranges, with seasonal changes in availability of food strongly influencing their movements. In spring and fall, the entire project area provides important forage habitat, whereas in summer and early fall the bears are drawn to the streams to feed on spawning salmon (Diamond Shamrock 1985). Nearly all of the project area was classified as being highly suitable as brown bear habitat (EPA 1985).

Project impacts to areas of early green-up, the salmon fishery, the berry-rich shrublands, and prey species will ultimately affect brown bears, as will more direct human disturbance in the form of easier access and increased hunting pressure.

Because of the national scarcity of the species and the high value of the habitat in the Diamond Chuitna project area, all of this habitat is placed in Resource Category 2 for brown bears.

5. Moose (Alces alces). Relative to its historic range, the species is considered abundant on both a national and regional basis. Historically, moose were an important source of food, clothing and implements along the major rivers. The species continues to be an important source of food and recreation, and is probably the most widely hunted species in Alaska. Spending by hunters results in benefits throughout the state's economy. The monetary value of moose is compounded by the number of nonresident hunters attracted to the state. Moose also have a high nonconsumptive value to photographers and wildlife observers.

Moose are an important evaluation species because they are common throughout the project area, particularly in the impacted riparian zones, and are generally responsive to mitigative habitat modifications. They will also be subject to increased hunting pressure during and after development of the project area.

Moose range throughout the project area. Calving takes place in the lowlands, where the cows and calves remain all summer, while bulls and cows without calves move to the upland tundra. The mine permit area covers most of an upland rutting area used every year by moose in the region. Snow brings the moose down to the lowlands; moose from the project area winter primarily in the vicinity of Granite Point (EPA 1985).

As moose habitat is nationally, regionally and locally abundant, and as habitat in the project area is predominantly of medium to high quality, most of the habitat in the project area is placed in Resource Category 3. The exception is the section of rutting area that overlaps with the mine permit area, placed in Resource Category 2 by virtue of its importance to the regional moose population.

6. Beaver (Castor canadensis). Abundant both nationally and regionally, beaver play important economic and ecological roles. Beaver trapping in Alaska continues to be an integral component of traditional lifestyles, providing a source of revenue for bush residents. Similarly, trapping provides recreational benefits to urban residents. Beavers have an important ecological function in modifying habitat, often in ways that benefit other fish and wildlife species such as coho salmon, waterfowl and moose. Beaver dams may impede the upstream migration of spawning salmon, particularly in years of low flow.

Beavers are common throughout the project area, along the major tributaries of the Chuitna and in backwater sloughs; concentrations are moderate and habitat is probably of medium value (Diamond Shamrock 1985). Because of the abundance on the national and regional level of beaver habitat comparable to that in the Diamond Chuitna project area, beaver habitat in the project area is placed in Resource Category 4.

7. Belukha (Delphinapterus leucas). While circumpolar in distribution, the belukha does not normally range south of Alaska. It is one of the most abundant cetaceans in the north Pacific. Belukhas are usually migratory, but the 300-400 whales in Cook Inlet constitutea nonmigratory, relatively isolated component of the population (USDI 1983). They feed on anadromous fish close to shore and at the mouths of rivers. The proposed Diamond Chuitna port facility may be in the middle of a belukha calving or nursery area (EPA 1985).

Given the indigenousness of the Cook Inlet belukha population and the probable importance of the Beluga River area as calving grounds, belukha habitat in the Diamond Chuitna project area is placed in Resource Category 3.

8. Chinook salmon (Oncorhynchus tshawytscha). Hydroelectric projects in the northwestern U.S. have destroyed a significant portion of the chinook spawning habitat in the conterminous 48 states. Because of the species' high commercial, recreational and subsistence values, there is considerable national and regional interest in minimizing losses to chinook populations and expanding existing stocks.

Chinook salmon support an important fishery in the Chuitna River system; three percent of the commercial catch in upper Cook Inlet comes from set net sites in the vicinity of the project area (EPA 1985). Chinook enter the Chuitna River in mid-June and spawn there and in the middle and lower reaches of streams 2002, 2003 and 2004. Although suitable spawning and rearing habitat is available in the upper sections of these streams, the upstream range of chinook has decreased in recent years, probably because access has been increasingly obstructed by beaver dams (EPA 1985). The Diamond Chuitna project would destroy chinook spawning and rearing habitat in these streams for an unknown length of time, through the mining of streambeds, increased sediment loads, and altered water flows and water chemistry.

Because of the national and local emphasis on chinook salmon and the ongoing loss of good habitat, chinook habitat in the project area that has been rated as high or very high quality (Chuitna River, 2002, middle and lower mainstem 2003, middle and loweer mainstem 2004) is placed in Resource Category 2; all medium-quality chinook habitat is placed in Resource Category 3 (upper mainstem 2003, 200304, 200305, upper mainstem 2004, 200403); and all habitat of low quality (200306) is placed in Resource Category 4 (EPA 1985).

9. Coho salmon (Oncorhynchus kisutch). On a national level hydroelectric development in the northwestern U.S. has resulted in a significant depletion of coho salmon stocks. The coho salmon is an important commercial and subsistence resource and a highly prized sport fish in Alaska. The average commercial harvest in 1980-1984 for upper Cook Inlet was 500,000 cohos, 7 percent of which were caught in the vicinity of the project area (EPA 1985).

Coho salmon spawn and rear throughout streams 2002, 2003 and 2004. Access to upper reaches does not appear to be limited by beaver dams, although beaver activity has altered spawning habitat in several tributaries, making it unsuitable for coho (Diamond Shamrock 1985). Additional destruction or degradation of coho habitat in anticipated as a result of mining in the project area.

Because of the species' national and regional importance and the increasing scarcity of good habitat, habitat in the Diamond Chuitna project area (all rated as being of high or very high quality; EPA 1985) is placed in Resource Category 2.

10. Pink salmon (Oncorhynchus gorbuscha). Historically, pink salmon were limited in range to coastal streams in northwestern Washington and to the north. As no significant reduction in that habitat has occurred, pink salmon habitat is considered abundant on a national and regional basis. The commercial, subsistence and sport value of this species is considered high. THe commercial catch in the coastal reaches of the project area is about six percent of the catch in upper Cook Inlet (EPA 1985).

Pink salmon spawning has been confined in recent years, possibly as a result of beaver dam obstructions, to the lower reaches of the Chuitna River and streams 2002 and 2003 (EPA 1985). Additional loss of habitat is anticipated as a result of coal mining in the project area.

Because of the abundance of pink salmon habitat nationwide, habitat in the project area of medium or high value is placed in Resource Category 3 (Chuitna River, 2002, mainstem 2003) and habitat of low value is placed in Resource Category 4 (200304, 200305, 200306, 2004; EPA 1985).

11. Rainbow trout (Salmo gairdneri). This species is one of the most sought-after sport fishes in North America, if not in the world. The original range of the rainbow trout is west of the Continental Divide from northern Mexico to the Kuskokwim River. Rainobw trout have been introduced to every continent except Antarctica. The species is now present in every state except Louisiana, Mississippi and Florida and has been introduced into several lakes in Alaska (Morrow 1980). Interest in this species on a national and state basis is high. Habitat is considered abundant in comparison to historic levels.

The rainbow trout population in the project area is judged to be in very good condition (ERT 1985). Juveniles are distributed throughout the tributaries in the project area, although they are most abundant in the Chuitna River, the lower mainstem of 2003 and the lower and middle mainstem of 2002. Adults are found in the mainstem of the Chuitna (EPA 1985, ERT 1985).

Although the area is capable of supporting a limited high-quality sport fishery, inaccessibility and lack of publicity have limited the sport harvest (EPA 1985). Increased human access, in conjunction with loss of habitat and prey, will have an impact on the rainbow population in the project area.

Because habitat in the project area is of medium to high quality and similar habitat is abundant on a local and national basis, rainbow trout habitat is placed in Resource Category 3.

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Appendix C

Department of Army Public Notice and Section 404(b)(1) Evaluation

US Army Corps of Engineers
Alaska District
Regulatory Branch
Post Office Box 898
Anchorage, Alaska 99506-0898

Public Notice of Application for Permit

PUBLIC NOTICE DATE: February 2, 1990
EXPIRATION DATE: March 5, 1990
REFERENCE NUMBERS: 2-850259
2-850260
2-850261
WATERWAY NUMBERS: Cook Inlet 330
Cook Inlet 331
Cook Inlet 332

This information was previously published on July 15, 1988 as a part of the Draft Environmental Impact Statement. This information is being re-published as part of the Final Environmental Impact Statement. Your review and comments are encouraged. Please refer to page 12 of this document for instructions on receiving the full text of the Final Environmental Impact Statement.

APPLICANTS: Granite Point Coal Port, Incorporated (Granite Point port component); Tidewater Services Corporation (Ladd port, transportation and housing components); Diamond Alaska Coal Company (mine component).

APPLICANTS' AGENT: Dan R. Harlow, President, Diamond Alaska Coal Company, 1227 West Ninth Avenue, Suite 201, Anchorage, Alaska 99501. (907) 276-6868.

LOCATION: The proposed project (known as the Diamond Chuitna Project) is located on the northwest side of Cook Inlet, approximately 45 miles west of Anchorage in the Kenai Peninsula Borough near the village of Tyonek. The proposed project is comprised of four separate components: the Diamond Chuitna Mine, the Granite Point or Ladd (alternate) Coal Port, transportation systems, and housing facilities.

PORT FACILITY: Granite Point, Sections 22, 27, T. 11 N., R. 12 W., Seward Meridian, Ladd (alternate) sections 19 and 20, T. 12 N., R. 10 W., Seward Meridian.

TRANSPORTATION CORRIDOR TO GRANITE POINT: Sections 3,4,10,15,22,27, T. 11 N., R. 12 W., Seward Meridian and sections 3,4,10,15,22,27,34, T. 12 N., R. 12 W., Seward Meridian

TRANSPORTATION CORRIDOR TO LADD POINT (ALTERNATE): Sections 6,7,18,19,20, T. 12 N., R. 10 W. Seward Meridian; section 31, T. 13 N., R. 10 W., Seward Meridian; sections 31,32,33,34,35,36, T. 13 N., R. 11 W., Seward Meridian; section 36, T. 13 N., R. 12 W., Seward Meridian; sections 2, 3, T. 12 N., R, 12 W. Seward Meridian.

HOUSING FACILITIES: Section 14, T., 12 N., R. 12 W., Seward Meridian.

MINE FACILITY: Sections 14, 15, 21-28, and 33-36, T. 13 N., R. 12 W., Seward Meridian; section 4, T. 12 N., R. 12 W., Seward Meridian.

PURPOSE: Diamond Alaska Coal Company proposes to develop a twelve million ton per year coal Company mine in the Beluga region of upper Cook Inlet. Recoverable coal reserves are estimated to be a minimum of 330 million short tons.

BACKGROUND INFORMATION: The Environmental Protection Agency (EPA) is preparing an Environmental Impact Statement (EIS) for the Diamond Chuitna project. The Alaska District Corps of Engineers is a cooperating agency in the EIS.

A permit decision regarding this project will not be made until after the Final EIS has been prepared. This public notice reflects the applicant's preferred alternative as well as an alternate port site. Other alternatives being considered in the EIS process and a discussion of their impacts are found in the EIS. The surface mine would be located on State coal leases in the Chuitna River drainage approximately 12 to 15 miles north of Granite Point. Coal production is scheduled to start at 2 million tons per year with the planned maximum production of 12 million tons per year in the seventh year of operation. The project life would be approximately 34 years. The basic surface mining technique would utilize a combination of trucks, shovels, and draglines supported by the necessary complement of front end loaders, dozers, graders, and other equipment.

WORK: The proposed work can be described in four parts: port facility, transportation corridors, housing, and mine facility.

1. PORT FACILITY (GRANITE POINT COAL PORT, INCORPORATED, APPLICANT, 2-860259, Cool Inlet 330): The port facility would require approximately 198 acres for the construction of the port facilities. Approximately 173 acres of wetlands would be filled as needed for the coal stockpile of 400,000 to 1,200,000 ton capacity, sediment ponds and buildings. A total of approximately 3,360,000 cubic yards (cy) of material would be placed in wetlands.

The following structures would be placed in the onshore port area:

a. Service buildings to house shops, warehouse, change areas, general administration offices and interim storage for supplies.

b. Heliport including landing pad, maintenance facilities, hangar, office lounge and toilet.

c. Main electrical control building.

d. Fire and ambulance station.

e. Water treatment plant and storage.

f. Sewage treatment plant (port only).

g. Diesel fuel storage tanks for approximately four month supply to support port, transportation, and mining operations.

h. Gasoline storage tanks for approximately four month supply to support port, transportation, and mining operation.

i. Miscellaneous oil and coolant storage tanks to support port, transportation, and mining operations.

j. Containerized and miscellaneous storage for interim storage of materials and supplies.

k. Fuel distribution station.

l. Coal stockpile of 400,000 to 1,200,000-ton capacity with stacker/reclaimer, yard conveyor system, truck dump, hopper feeder system, coal haulage road, overland conveyor drive house, and transfer stations for overland conveyor to stockpile conveyor and stockpile conveyor to port (approach) conveyor.

m. Coal haulage road to transport coal prior to startup of conveyor operations, and several access roads to link various port facility components.

n. Electrical substation.

o. Power distribution system consisting of overland and underground powerlines to provide power for port equipment and distribute power to mine, transportation, and housing facilities.

p. Diesel fuel electric generating facility to support mine transportation system, port, and housing facilities.

q. All weather parking area.

r. Sediment control structures to collect surface runoff from the port facilities area.

s. Barge unloading beach area to receive supplies, parts, and equipment for the port facility, transportation system, mine, and housing facility.

Most of the wetland areas will be filled with gravel aggregate. Construction of surface water runoff ponds located in the wetland areas would require removal of dredge material. The sides of the sedimentation ponds will be bermed. Wetlands disturbed by the coal piles will be filled with surrounding earth material and covered with gravel aggregate where required.

Construction activities for the onshore facilities will include excavation, fill, and site preparation work to establish the designed site elevations for placement of structures and roads and to establish surface drainage. Site work will begin by clearing and grubbing of all trees and brush. This material will be pushed into windrows by crawler tractors and piled for later burning. In areas where deposits of peat and muskeg are found, drainage ditches will be constructed to drain the wet boggy areas and facilitate removal or site development. The peat material will be hauled to an approved disposal site for final placement.

Once organic surface material has been removed from the site, classified fill material will be hauled from adjacent borrow areas and placed as subgrade for building foundations. Surface drainage from the area will be established by the subgrade material providing an elevated and drained surface on which structures can be placed. Final grade would then include surface material for the onshore port facilities. Placement of grade and subgrade material will incorporate the use of scrapers, crawler tractors, water trucks, motor graders, compactors, and other equipment.

The major offshore facility would be an approximately 12,500' trestle with ship breasting and mooring dolphins. The trestle would consist of structural steel framework used to support the approach conveyor and a 5' wide roadway which will accommodate a battery powered maintenance vehicle and personnel carrier. The piers which are required to support the trestle will be spaced at approximately 400' intervals along the trestle. The piers have been designed to withstand ice, tide, seismic, and wind forces present during the year round operation. Each pier also includes cathodic protection to withstand the chemical activity of the salt water and climatic condition. This protection method helps to ensure long-term stability and operation of the pier support system. Approximately 940' of the length of the trestle would be above the mean high tide line (MHTL), thus reducing the length of the trestle extending into the inlet. The trestle would be a minimum of 20' above MHHW.

Coal would be transported from the onshore port facilities to the shiploader facility at the end of the approach trestle on a covered conveyor. Although production of 8 million tons per year requires only one 72" wide conveyor belt, sufficient room has been included in the trestle to accommodate a second 72" wide conveyor when production increases.

All coal will be loaded by use of a linear shiploader. The shiploader will be used to discharge all coal from the approach conveyor into waiting ocean-going vessels. This equipment will be constructed of steel support beams and covered where necessary to protect the equipment and coal from adverse weather. The design of the shiploader will have sufficient capacity to receive the output of two 72" wide approach conveyors. In addition, the shiploader will accommodate the tidal variations (approximately 28') and a variety of vessel sizes (22,000 to 120,000 tons DWT) along with the need for distributing the coal evenly in the ship's hatches.

A system of breasting and mooring dolphins will be used to hold the ocean-going vessel during coal loading activities to ensure the safety of the vessel and the shiploader facilities. These mooring dolphins have been specifically designed to accommodate the large tide, ice, wind, and seismic forces in the Cook Inlet.

While the vessel is moored at the shiploading area, a fendering system will be required to protect the vessel and the shiploader platform from movement of the vessel during loading activities. Vessel movement, both vertically and horizontally, will be affected by tides, wind, and ice motion in the Cook Inlet. A sliding fender will be used, supported by piers, and raised and lowered with electric wenches. The sliding fender is used to minimize effects of ice which may be encountered during winter months by always keeping the fender approximately 3' above water.

The design, fabrication, and construction of the Coal Port will take approximately three years. The construction season will last from May to October each year, shorter or longer due to weather conditions. Fabrication of modules will be completed at factory locations. The modules will be shipped by barge to the port for offloading, assembling, and erection.

The offshore facilities consist of 1) above-water equipment used to support and convey coal to a shiploader for placement into ocean-going vessels, and 2) below-water structures including piers to support the structure and withstand effects of weather, tide, and seismic activity. Construction work will begin by locating each monopile site along the trestle. Depending on the approach route selected, 18 to 30 piles will be driven with hammers to predetermined depths into the floor of the Cook Inlet for support of the approach trestle. Similar monopiles will be driven at the end of the approach trestle to support the shiploader, platform, and mooring and fendering dolphins. Once the monopiles are driven, structural steel trusses will be placed with barge-mounted cranes. The trusses serve as the platform for containment of conveyor belts and shiploading equipment. This equipment, which has been fabricated and pre-assembled, will also be placed with barge-mounted cranes. As with all structures, fabrication and pre-assembly into easily handled modules will take place at a factory location prior to shipment to the port for erection.

No site preparation work is anticipated to be necessary for either trestle and/or berthing location. Sufficient survey work has been completed to show that dredging and filling of the offshore area will not be necessary. The offshore construction activities will encompass two construction seasons. Due to adverse weather, no construction work will be planned for the winter months from November through May.

Prior to any onsite construction work, engineering, design, procurement, fabrication, and preassembly of structures into easily handled modular components will be carried out beginning in year 1 of the project. Construction work on site will be started in the spring of year 2 after ice breakup.

2. ALTERNATE PORT FACILITY (LADD COAL PORT, TIDEWATER SERVICES COMPANY, APPLICANT, 2-850260, Cook Inlet 331): Approximately 28 acres of wetlands would be filled as needed for the coal stockpile, sediment ponds and buildings.

During construction activities in years 1, 2, and 3 all materials, supplies and ewuipment would be off-loaded from barges at the Ladd Port location for transportation to other project components.

The port features and construction methods and sequences described in "1" above all applicable for the Ladd Port facility, as well.

3. TRANSPORTATION CORRIDOR GRANITE POINT (TIDEWATER SERVICES COMPANY, APPLICANT, 2-850250, Cook Inlet 331): The transportation system proposed for the project consists of the main haulage/access road and the overland conveyor system. The transportation systems would impact a total of 170 acres with approximately 45 acres of that being wetlands.

The haul road would be approximately 11.3 miles long and would generally run parallel to the conveyor system. The haul road would be built in a new right-of-way and would not use existing logging roads south of the Chuitna River. A total of approximately 2,260,000 cy of material would be placed in wetlands. The finished road surface will have two 35' wide traffic lanes with 12' wide gravel shoulders on either side, The road surface will be gravel surfaced and crowned to promote drainage from the road surface. Drainage ditches would be provided on either side of the road in level and cut areas.

All construction and operational activites related to the operation of the transportation facilities would be conducted so as to minimize potential environmental impacts. Drainage and sediment control measures would include the construction of ditches to divert runoff from undisturbed areas around operational areas, construction of collection ditches, installation of culverts under roads to collect and control runoff, surfacing of main roads and facility areas with gravel material, revegetation of road cuts, embankments and disturbed areas, and utilization of specific localized sediment control measures in sensitive areas.

Drainage and diversion structures have been designed to pass the peak discharge from a 10-year, 24 hour event.

Bridges or large culverts will be constructed to carry the road traffic at five major drainage crossings: (a) an unnamed creek north of the Chuitna River, (b) the Chuitna River, (c) an unnamed creek south of the Chuitna River, (d) Old Tyonek Creek, and (e) Tyonek Creek. During road construction, temporary pontoon bridges or stream fords will be used to provide equipment access. Permanent bridge structures will be of truss and girder construction supported by concrete lower case piers.

There are several locations along the alignment of the haul road where the presence of peat or muskeg deposits in combination with saturated or semi-saturated glacial outwash and alluvium result in adverse surface conditions for road construction. In these areas, a special construction technique will be used which incorporates the following fill sequence: The natural vegetative mat; a flotation material typically of wood chips or logs; a minimally compacted layer of fill material; geotechnical fabric to provide lateral stability, drainage and distribute bearing loads over a large area; and, finally normal road construction techniques.

The overland conveyor system would run roughly parallel to the haul road for a length of 9.8 miles. A light duty, minimally improved service/access road suitable for four-wheel drive vehicles would be built immediately adjacent to the conveyor for maintenance purposes. The right-of way would be cleared for a width of approximately 25'. A total of approximately 225,000 cy of material would be placed in wetlands.

Drainage and sediment control measures for the conveyor would be the same as those described for the main haul road. Brush within the conveyor right-of-way would be mechanically controlled; no herbicides would be used.

Limited cut and fill work would be required along the alignment of the overland conveyor system and the adjacent access road. Generally both conveyor alignments have been selected to avoid major topographic features. Construction would be similar to the haul road construction described previously.

Conveyor support bridges would be constructed at the same five drainages bridged by the haul road. The conveyor crossing of the Chuitna River would require an extended span supported by a cable suspension structure. In most areas along the conveyor right-of-way the support piers of the conveyor would be anchored to poured concrete footings; however, in those areas where unstable surface materials will not provide adequate lateral support, pilings, spread footings, or a combination of the two would be utilized in the foundation structures.

At ten points, the conveyor would be buried for a minimum of 200' in large diameter culverts or arch spans to permit moose, bear and other animals to pass over the conveyor. There would also be three places where the conveyor would be raised to permit existing roads to pass underneath.

During construction of the overland conveyor system, both temporary and permanent diversion systems would be constructed to divert runoff through culverts installed under the access road.

In certain sensitive areas such as construction areas adjacent to stream channels, localized sediment control measures similar to those such disturbed areas would be revegetated and mulched, if necessary, as soon after completion of construction activities as possible to minimize surface erosion.

4. TRANSPORTATION CORRIDOR-LADD (TIDEWATER SERVICES COMPANY, APPLICANT, 2-850260, Cook Inlet 331): The haul road for this alternate site would be approximately 13 miles long. Approximately 69 acres of wetlands would be filled. The construction methods and sequences described in "3" above are applicable for this corridor, as well.

5. HOUSING FACILITIES (TIDEWATER SERVICES COMPANY, APPLICANT, 2-850250, Cook Inlet 331): Because of the remoteness of the project site from Anchorage and other Alaska communities, the applicants are planning the construction of a housing complex to accommodate the work force of 500 employees. A landing strip located approximately one mile north of the housing area is also proposed to allow shuttling of employees between Anchorage and the site. The housing complex including roads and landing strip would impact approximately 72 acres with 6 acres being in wetlands. A total of approximately 60,000 cy of fill would be placed in wetlands.

The housing complex would include: housing buildings, arctic corridors, dining building, recreation building and facilities, access roads, parking, boiler plant, maintenance/warehouse facilities, sewer plant, and water treatment plant. The landing strip and associated facilities include a landing strip, terminal building and a maintenance building. A north-south and east-west runway would be constructed. A total of approximately 90,000 cy of fill would be placed in wetlands for the landing strip.

Access to the housing complex would be provided by a one-half mile road from the main haul road. Another road approximately one-quarter mile in length would connect the main haul road to the landing strip. Another short road would be constructed from the housing area north to the sewage treatment plant.

The roads would be all weather roads suitable for bus traffic and light vehicle use. Sufficient parking would be provided. In order to control dust, access roads would be watered on a periodic basis.

During construction of the housing facilities, a series of diversion ditches and a sediment pond would be constructed. These ditches and ponds would serve to control runoff from the site and retain sediment. In order to control wildlife in the area, protection measures would be taken with trash and garbage in the area. Trash and garbage would be incinerated or disposed of in dumpsters. The dumpsters would be enclosed to prevent wildlife access.

The sites would be landscaped with grasses, shrubs, and trees native to this part of Alaska. The landscaping would serve to minimize erosion and sediment while being aesthetically pleasing.

6. MINE FACILITY (DIAMOND ALASKA COAL COMPANY, APPLICANT, 2-850261, Cook Inlet 332): The mine unit is approximately 10,000 acres although the actual area to be mined would be 5240 acres in size. This area would be divided into north and south pits which would be mined simultaneously but in separate operations during the life of the project. A maximum of 450 acres of pit would be open at any one time. An additional maximum of 150 acres around the pit would be disturbed at any one time in clearing and grubbing the vegetation in preparation for stripping overburden, or recontouring in preparation for revegetation. Average pit depth would be approximately 200 feet.

The mine area would disturb approximately 1086 acres of wetlands, while sediment ponds, haul roads, facilities, and overburden stockpiles would disturb an additional approximately 8 acres of wetlands.

A system of sediment ponds and collection ditches would be constructed to ensure that discharges from drainage alterations and runoff into the pit meet applicable water quality standards. Where other treatment was necessary before discharge, e.g. flocculation, additional treatment facilities would be built in conjunction with the sediment ponds.

At the start of operations, 22 million cubic yards of overburden from the initial cut would be excavated and placed in a permanent stockpile. This stockpile would be stabilized, graded and then revegetated to prevent erosion.

The permanent mine service area would be located on the southern edge of the mining limit. This area would include the main administration building; a service building housing the maintenance, warehouse and service facilities; equipment ready lines; water, diesel fuel, gasoline and lubricant storage; electrical substation; ambulance and fire station; water and sewage treatment plants; emergency power system; explosives magazine; heliport; and emergency and safety facilities. The coal would be crushed in the mine servcie area and loaded to the conveyor for transport to the port. The coal would not be washed or otherwise processed.

WATER QUALITY CERTIFICATION: A permit for the described work will not be issued until a certification or waiver of certification as required under Section 401 of the Clean Water Act (Public Law 95-217), has been received from the Alaska Department of Environmental Conservation.

COASTAL ZONE MANAGEMENT ACT CERTIFICATE: Section 307(c)(3) of the Coastal Zone Management Act of 1972, as amended by 16 U.S.C. 1456(c)(3), requires the applicant to certify that the described activity affecting land or water uses in the Coastal Zone complies with the Alaska Coastal Management Program. A permit will not be issued until the Office of Management and Budget, Division of Governmental Coordination has concurred with the applicant's certification.

PUBLIC HEARING: Public hearings were held on this project on August 17, 1988 in Anchorage, Alaska and on August 18, 1988 in Tyonek, Alaska. No additional public hearings have been scheduled. Any person may request, in writing, within the comment period of this public notice, that an additional public hearing be heldto consider this application. Requests shall state, with particularity, the reasons for holding another hearing.

CULTURAL RESOURCES: A cultural resources study has been done in the area. If has been determined and coordinated with the State Historic Preservation Officer that there would be no effect on cultural resources.

ENDANGERED SPECIES: The project area is within the known or historic range of the Peregrine Falcon. However no nest sites have been located and no impact is expected to occur.

FEDERAL SPECIES OF CONCERN: The following National Species of Special Emphasis were recorded within or adjacent to the project area: Chinook Salmon, Coho Salmon, Steelhead Trout, Canada Goose, Snow Goose, Trumpeter Swan, Mallard, Sandhill Crane and Bald Eagle.

The following additional species of Special Emphasis are found in the region of the project area: Brant, White-fronted Goose, Canvasback, and Peregrine Falcon.

FLOOD PLAIN MANAGEMENT: Evaluation of the described activity will include conformance with appropriate State or local flood plain standards; consideration of alternative sites and methods of accomplishment; and weighing of the positive, concentrated and dispersed, and short and long-term impacts on the flood plain.

SPECIAL AREA DESIGNATION: None.

EVUALATION: The decision whether to issue a permit will be based on an evaluation of the probable impacts including cumulative impacts of the proposed activity and its intended use on the public interest. Evaluation of the probable impacts which the proposed activity may have on the public interest requires a careful weighing of all those factors which become relevant in each particular case. The benefits which reasonably may be expected to accrue from the proposal must be balanced against its reasonable foreseeable detriments. The decision whether to authorize a proposal, and if so the conditions under which it will be allowed to occur, are therefore determined by the outcome of the general balancing process. That decision should reflect the national concern for both protection and utilization of important resources. All factors which may be relevant to the proposal must be considered including the cumulative effects thereof. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people.

For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines. Subject to the preceding sentence and any other applicable guidelines or criteria (see Sections 320.2 and 320.3), a permit will be granted unless the District Engineer determines that it would be contrary to the public interest.

AUTHORITY: This permit will be issued or denied under the following authorities:

(X) Perform work in or affecting navigable waters of the United States - Section 10, Rivers and Harbors Act 1899 (33 U.S.C. 403).

(X) Discharge dredged or fill material into waters of the United States - Section 404, Clean Water Act (33 U.S.C. 1344). Therefore, our public interest review will consider the guidelines set forth under Section 404(b) of the Clean Water Act (40 CFR 230).

Comments on the described work, with the reference number, should reach this office no later than the expiration date of this Public Notice to become part of the record and be considered in the decision. If further information is desired concerning this notice, contact Ms. Carol Gorbics at (907) 753-2724.

District Engineer
U.S. Army, Corps of Engineers

Attachments

If you would like a copy of the Environmental Impact Statement, please fill this out and return to the address listed below.

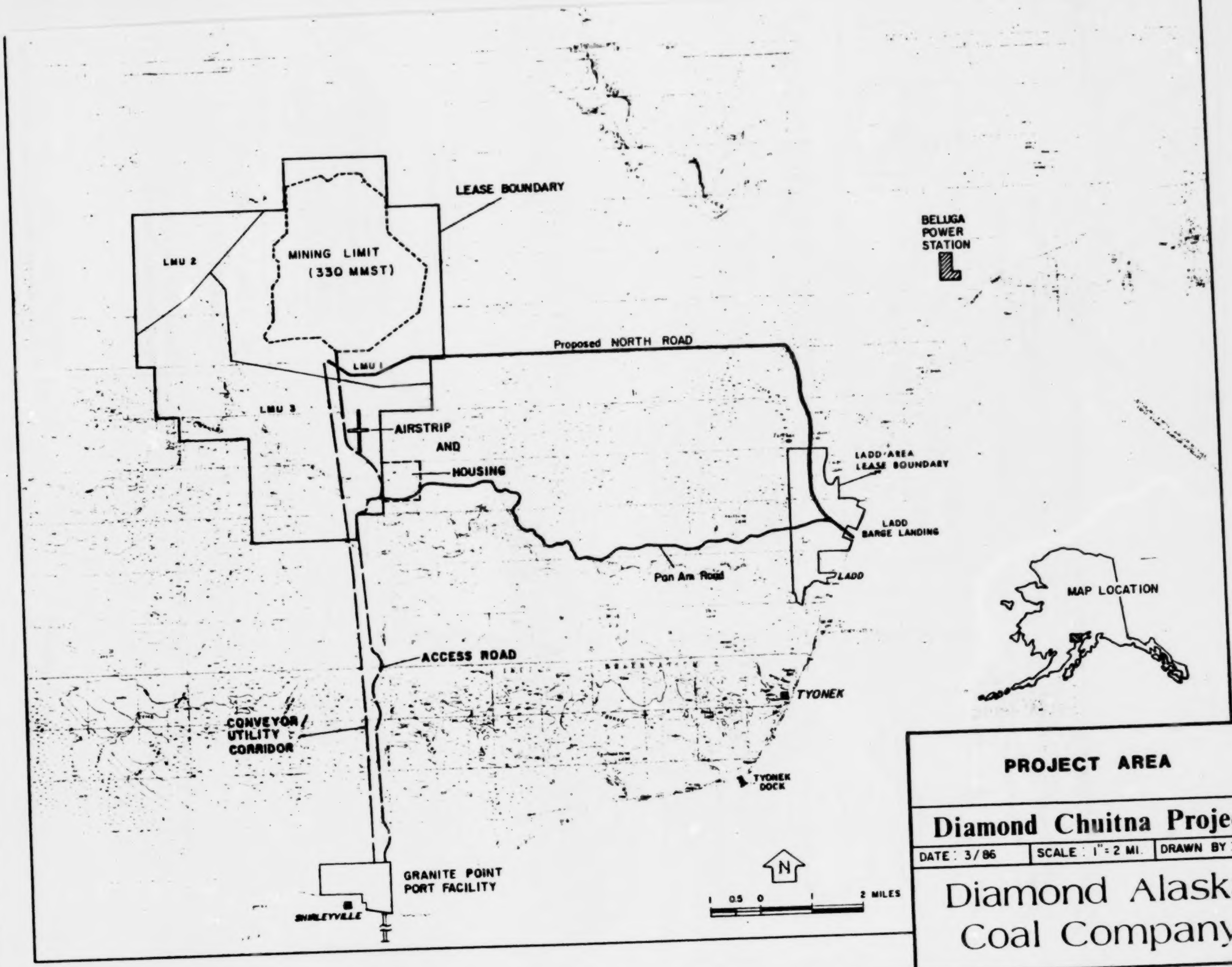
NAME: ______________________________

MAILING ADDRESS: ______________________________

__________ ~~I would like a copy of the Draft EIS for the Diamond AK Coal Project~~

__________ I would like a copy of the Final EIS for the Diamond AK Coal Project

SEND to: Mr. Rick Seaborne
U.S. Environmental Protection Agency - EEB
1200 Sixth Avenue, WD 136
Seattle, Washington 98101

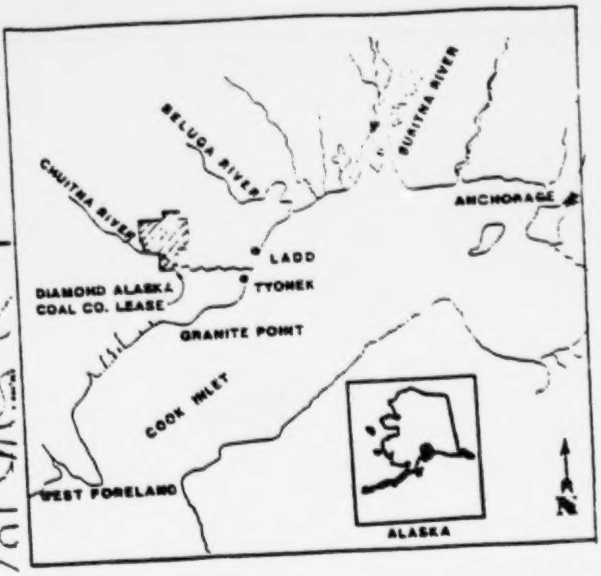

LEASE BOUNDARY
LMU 2
MINING LIMIT
(330 MMST)
LMU 1
LMU 3
AIRSTRIP
AND
HOUSING
Proposed NORTH ROAD
BELUGA
POWER
STATION
LADD AREA
LEASE BOUNDARY
LADD
BARGE LANDING
LADD
Pan Am Road
ACCESS ROAD
CONVEYOR/
UTILITY
CORRIDOR
TYONEK
TYONEK
DOCK
GRANITE POINT
PORT FACILITY
SHIRLEYVILLE
MAP LOCATION
N
1 0.5 0 1 2 MILES

PROJECT AREA

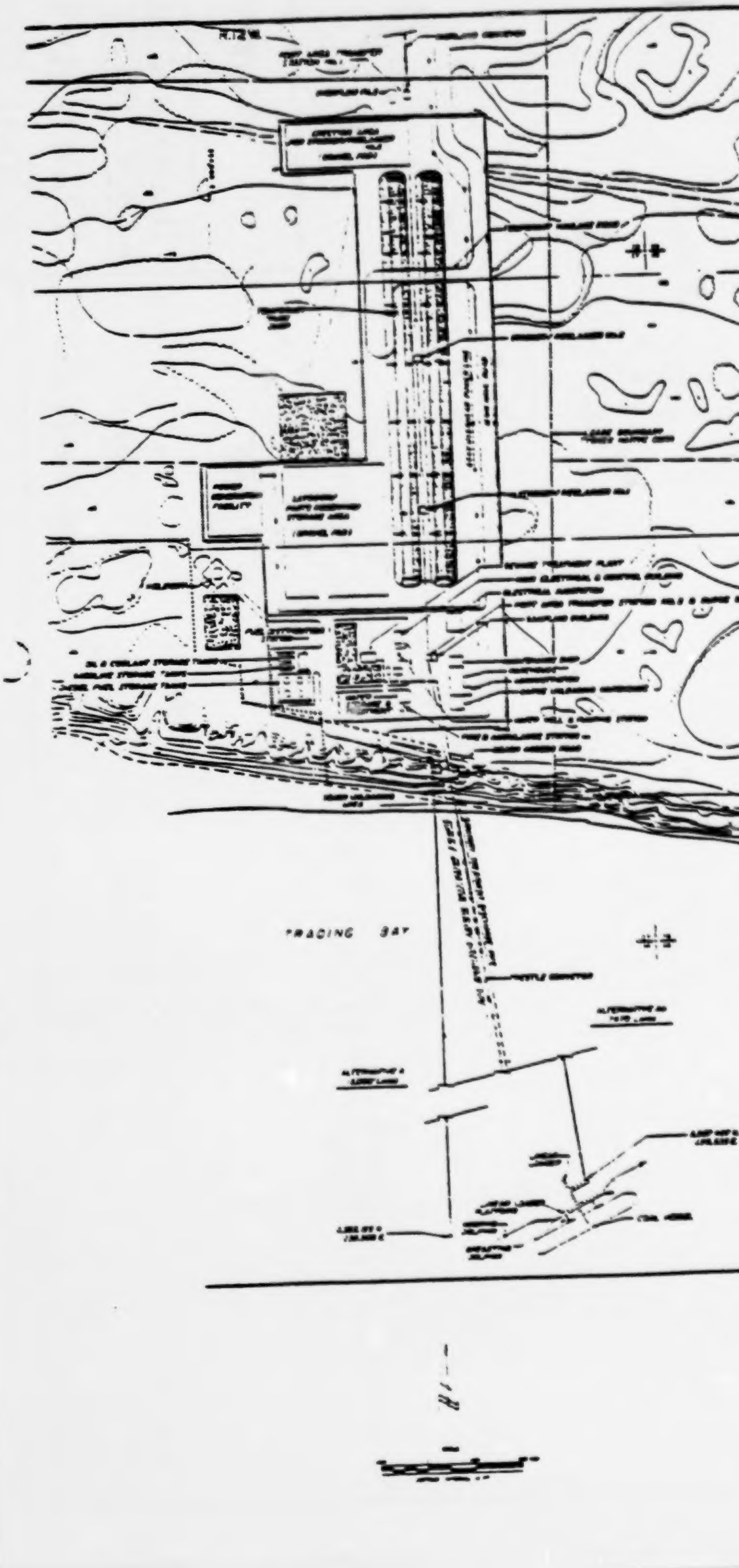
Diamond Chuitna Project

DATE: 3/86 | SCALE: 1" = 2 MI. | DRAWN BY: C.G.J.

Diamond Alaska
Coal Company


BELUGA RIVER
SUSITNA RIVER
CHUITNA RIVER
ANCHORAGE
LADD
TYONEK
DIAMOND ALASKA COAL CO. LEASE
GRANITE POINT
COOK INLET
WEST FORELAND
ALASKA
N

Fill requirements for port facilities including all pads, roads, and coal stock piles - 3,360,000 yd^3


R.12 W.
TRADING BAY

LEGEND

LEASE BOUNDARY—PORT AREA
TYONEK NATIVE LANDS BOUNDARY
SEWAGE DISCHARGE PIPE
SEDIMENT POND LOCATION
COAL STOCKPILE
LIMIT OF ELEVATED AGGREGATE

Map Coal Port Facilities – Granite Point

Diamond Chuitna Project
Kenai Peninsula Borough

Sheet 2 of 15

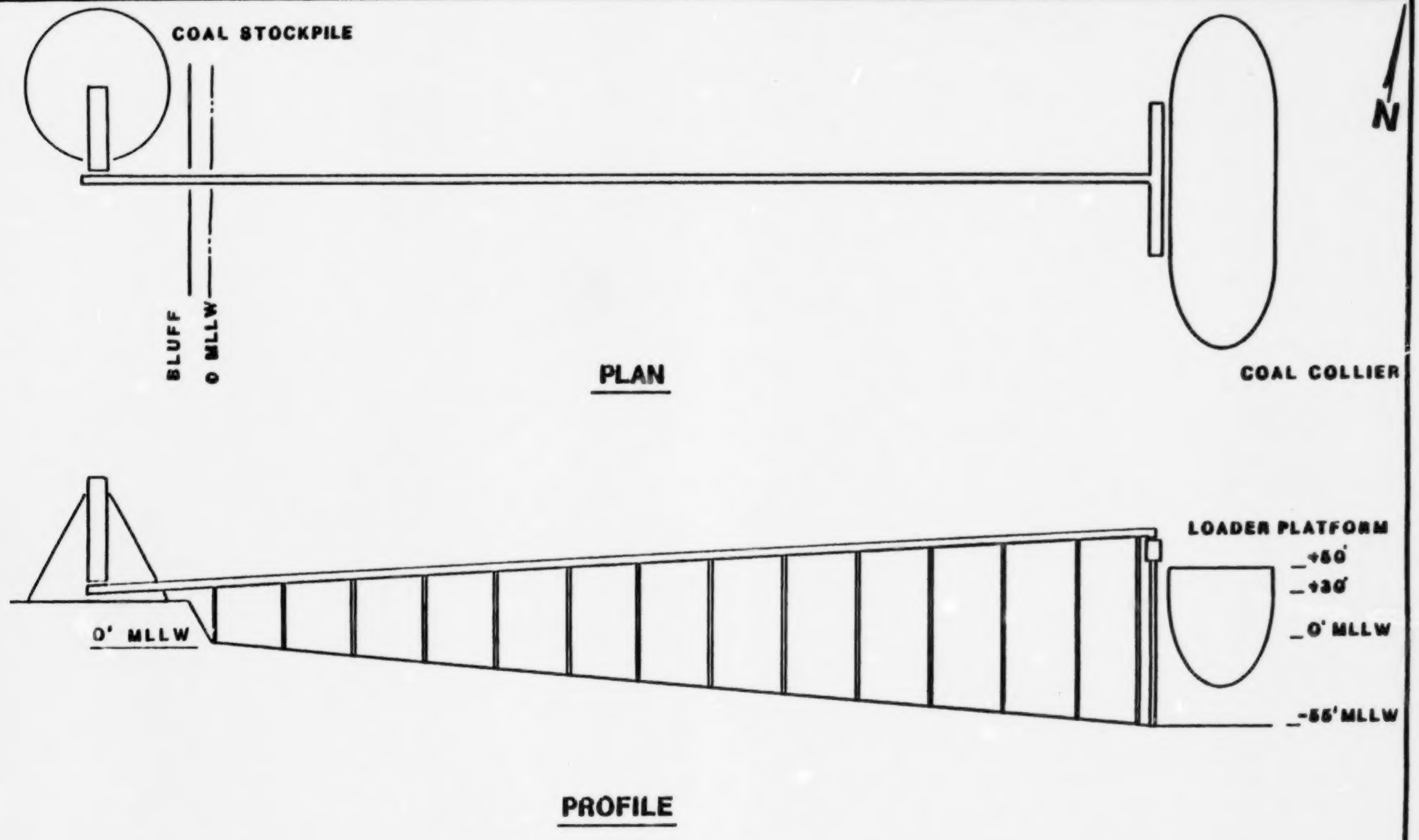
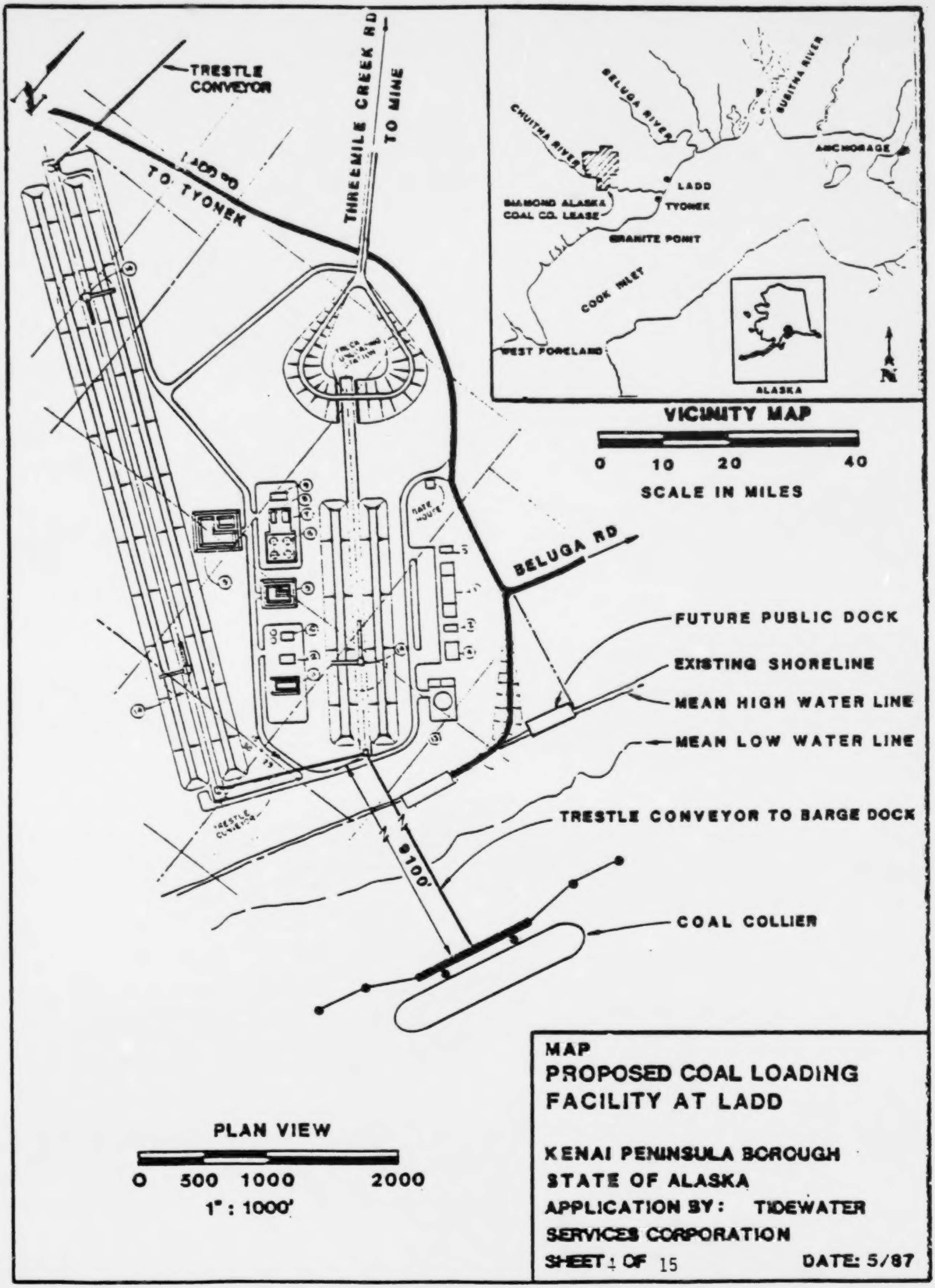

COAL STOCKPILE
BLUFF
0 MLLW
N
COAL COLLIER
PLAN
0' MLLW
LOADER PLATFORM
+50'
+30'
0' MLLW
-55' MLLW
PROFILE

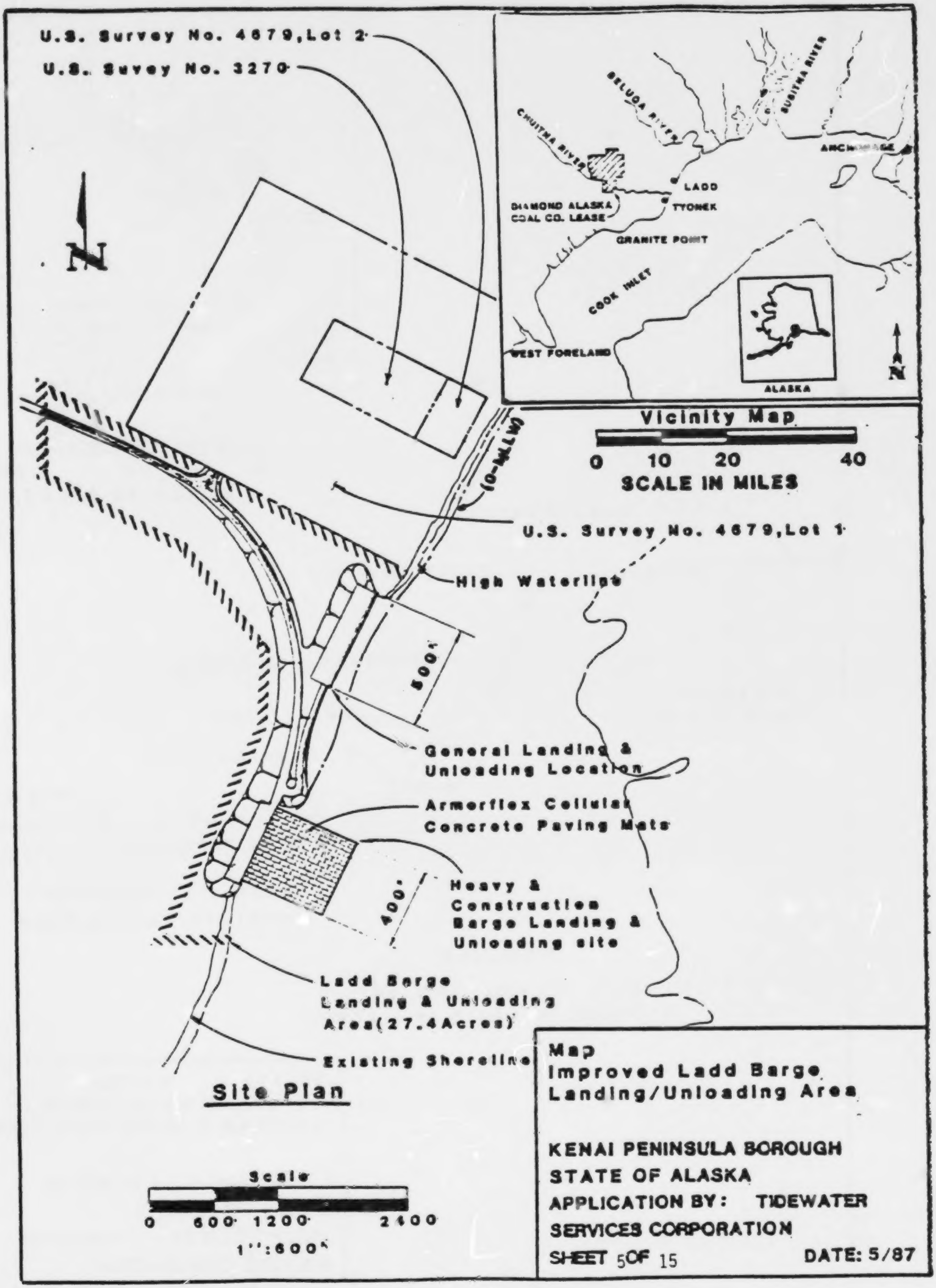
FIGURE 3 of 15 TYPICAL
LOADING STRUCTURE
LADD LOADING AREA
5/87 NTS


TRESTLE CONVEYOR
N
LADD RD
TO TYONEK
THREEMILE CREEK RD
TO MINE
GATE HOUSE
BELUGA RD
FUTURE PUBLIC DOCK
EXISTING SHORELINE
MEAN HIGH WATER LINE
MEAN LOW WATER LINE
TRESTLE CONVEYOR TO BARGE DOCK
TRESTLE CONVEYOR
8100'
COAL COLLIER
BELUGA RIVER
SUSITNA RIVER
CHUITNA RIVER
ANCHORAGE
LADD
DIAMOND ALASKA COAL CO. LEASE
TYONEK
GRANITE POINT
COOK INLET
WEST FORELAND
ALASKA
N
VICINITY MAP
0
10
20
40
SCALE IN MILES
PLAN VIEW
0
500
1000
2000
1" : 1000'

MAP

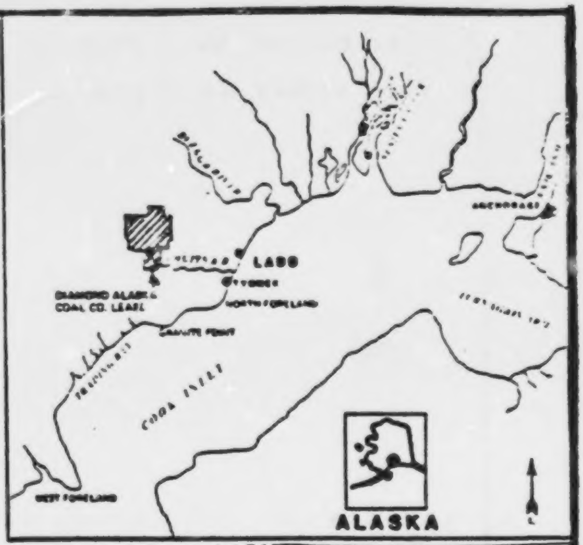
PROPOSED COAL LOADING FACILITY AT LADD

KENAI PENINSULA BOROUGH
STATE OF ALASKA
APPLICATION BY: TIDEWATER SERVICES CORPORATION
SHEET 1 OF 15 DATE: 5/87


U.S. Survey No. 4679,Lot 2
U.S. Suvey No. 3270
N
(0-MLLW)
U.S. Survey No. 4679,Lot 1
High Waterline
500'
General Landing & Unloading Location
Armorflex Cellular Concrete Paving Mats
400'
Heavy & Construction Barge Landing & Unloading site
Ladd Barge Landing & Unloading Area(27.4Acres)
Existing Shoreline
Site Plan
Scale
0
600
1200
2400
1":600'
BELUGA RIVER
SUSITNA RIVER
CHUITNA RIVER
ANCHORAGE
LADD
TYONEK
DIAMOND ALASKA COAL CO. LEASE
GRANITE POINT
COOK INLET
WEST FORELAND
ALASKA
N
Vicinity Map
0
10
20
40
SCALE IN MILES

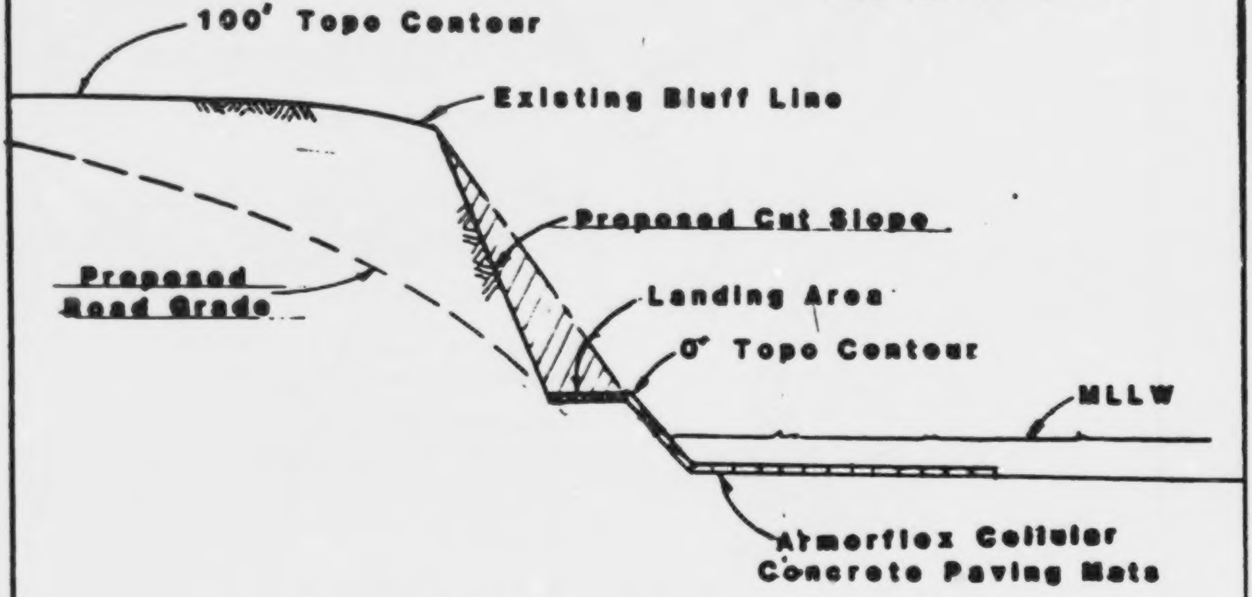
Map
Improved Ladd Barge
Landing/Unloading Area

KENAI PENINSULA BOROUGH
STATE OF ALASKA
APPLICATION BY: TIDEWATER
SERVICES CORPORATION
SHEET 5 OF 15 DATE: 5/87


LADD
TYONEK
DIAMOND ALASKA COAL CO. LEASE
NORTH FORELAND
GRANITE POINT
COOK INLET
WEST FORELAND
ANCHORAGE
ALASKA

Vicinity Map

0 10 20 40
SCALE IN MILES

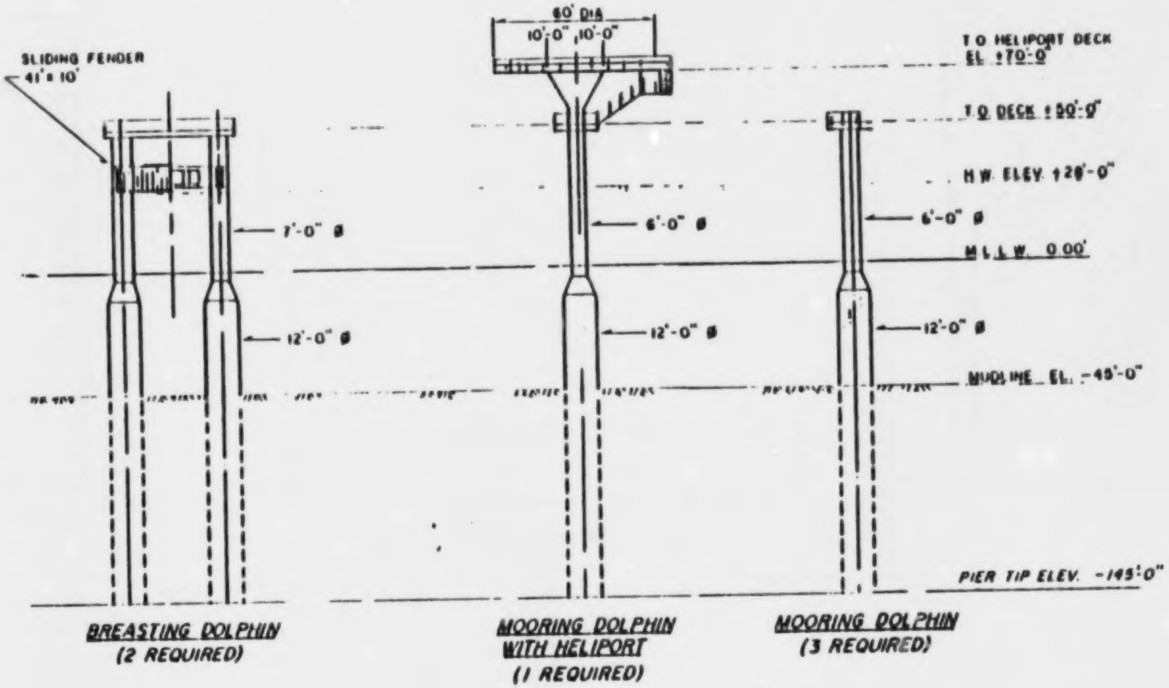

100' Topo Contour
Existing Bluff Line
Proposed Cut Slope
Proposed Road Grade
Landing Area
0' Topo Contour
MLLW
Armorflex Cellular Concrete Paving Mats

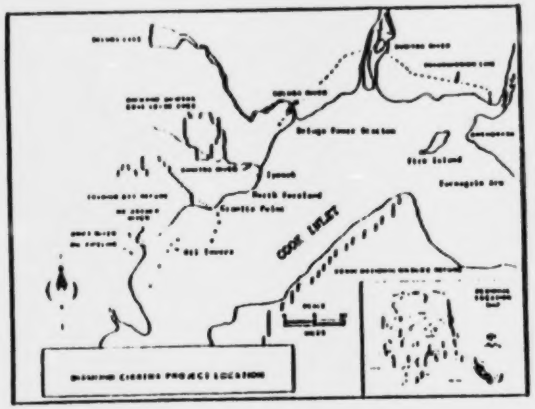
PROFILE

Vert. Scale 1 in = 60'
Horiz. Scale 1 in : 200'

Figure Profile
Improved Ladd Barge
Landing / Unloading Area

KENAI PENINSULA BOROUGH
STATE OF ALASKA
APPLICATION BY: TIDEWATER
SERVICES CORPORATION
SHEET 6 OF 15 DATE: 3/87


SLIDING FENDER
41' x 10'
60' DIA
10'-0" 10'-0"
T.O HELIPORT DECK
EL +70'-0"
T.O DECK +50'-0"
H.W. ELEV +28'-0"
7'-0" ø
6'-0" ø
6'-0" ø
M.L.L.W. 0.00'
12'-0" ø
12'-0" ø
12'-0" ø
MUDLINE EL. -45'-0"
PIER TIP ELEV. -145'-0"
BREASTING DOLPHIN
(2 REQUIRED)
MOORING DOLPHIN
WITH HELIPORT
(1 REQUIRED)
MOORING DOLPHIN
(3 REQUIRED)

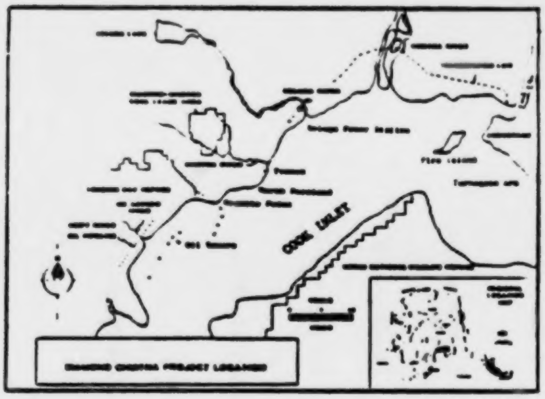

Beluga Power Station
Tyonek
North Foreland
Granite Point
Oil Towers
Fire Island
Turnagain Arm
COOK INLET

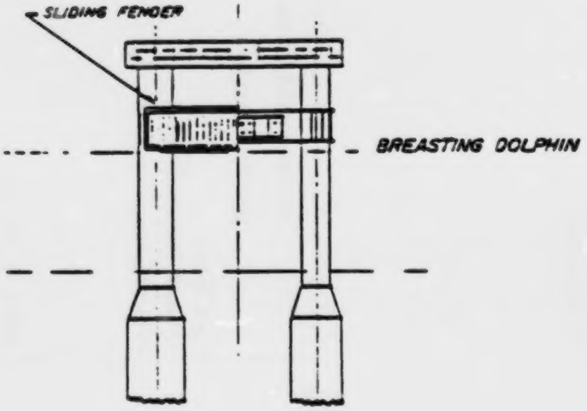
Typical Breasting and

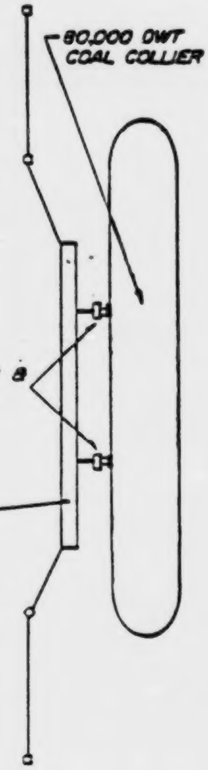
Mooring Dolphin

Cook Inlet
Diamond Chuitna Project
Kenai Peninsula Borough

Sheet 7 of 15



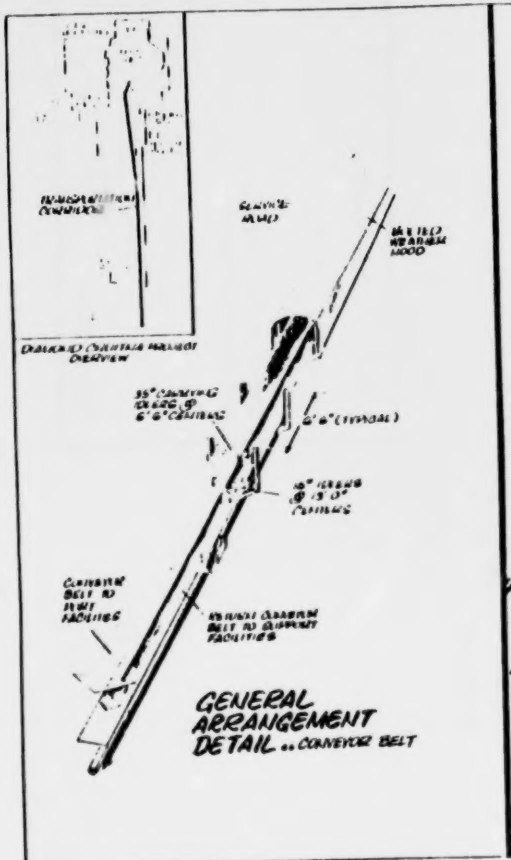

SLIDING FENDER
BREASTING DOLPHIN


80,000 DWT
COAL COLLIER
BREASTING DOLPHINS &
SLIDING FENDERS
LOADER LINEAR
PLATFORM

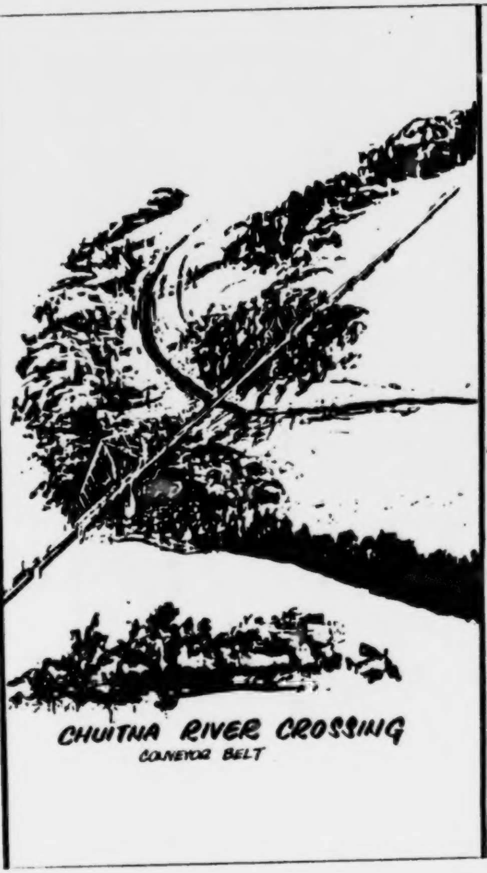
Typical Fendering System

Cook Inlet
Diamond Chuitna Project
Kenai Peninsula Borough

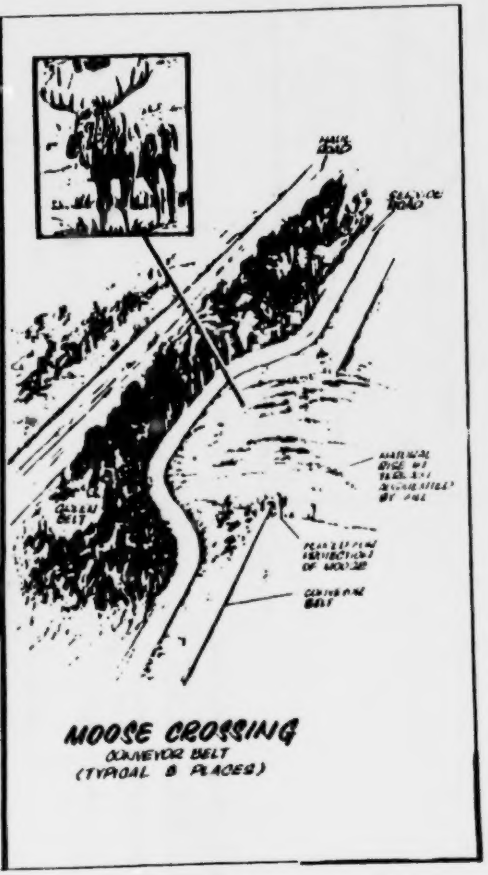
Sheet 8 of 15


DIAMOND CHUITNA PROJECT OVERVIEW
SERVICE ROAD
35° CARRYING IDLERS @ 6'6" CENTERS
6'6" (TYPICAL)
CONVEYOR BELT TO PORT FACILITIES

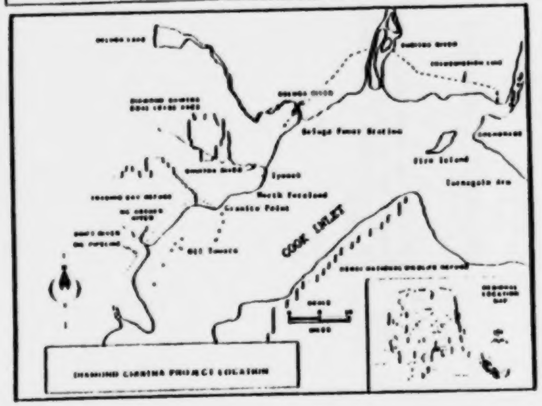
GENERAL ARRANGEMENT DETAIL .. CONVEYOR BELT



CHUITNA RIVER CROSSING
CONVEYOR BELT


MAIN ROAD
SERVICE ROAD
GREEN BELT
CONVEYOR BELT

MOOSE CROSSING
CONVEYOR BELT
(TYPICAL 8 PLACES)

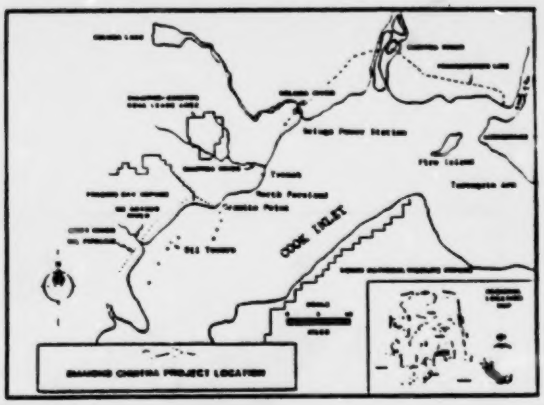

Beluga Power Station
Fire Island
Turnagain Arm
Tyonek
North Foreland
Granite Point
Oil Towers
COOK INLET
DIAMOND CHUITNA PROJECT LOCATION

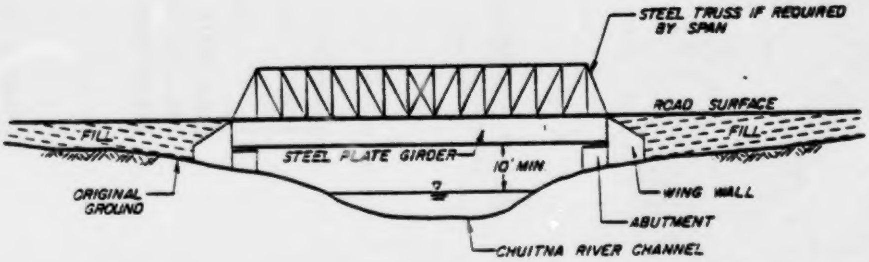
Map ' Artist Illustration -

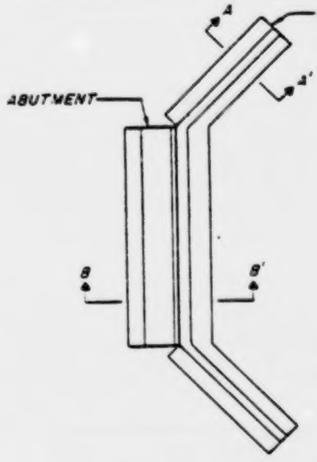
Overland Conveyor

Cook Inlet
Diamond Chuitna Project
Kenai Peninsula Borough

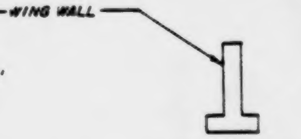
Sheet 9 of 15


Beluga Power Station
Tyonek
North Foreland
Granite Point
Fire Island
Turnagain Arm
COOK INLET
DIAMOND CHUITNA PROJECT LOCATION

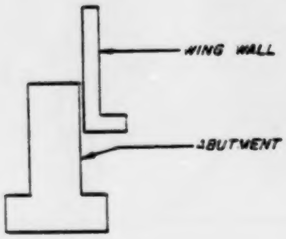

STEEL TRUSS IF REQUIRED BY SPAN
ROAD SURFACE
FILL
FILL
STEEL PLATE GIRDER
10' MIN
ORIGINAL GROUND
WING WALL
ABUTMENT
CHUITNA RIVER CHANNEL


A
A'
ABUTMENT
B
B'

ABUTMENT & WING WALL PLAN



SECTION A-A'


WING WALL
ABUTMENT

SECTION B-B'

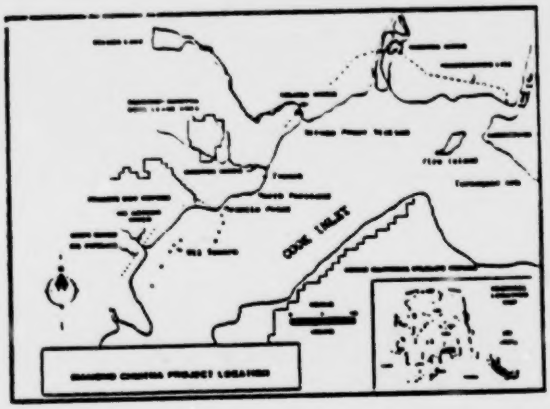
NOTE ABUTMENTS AND WING WALLS TO BE FOUNDED ON SUITABLE MATERIAL AND CONSTRUCTED OF REINFORCED CONCRETE.

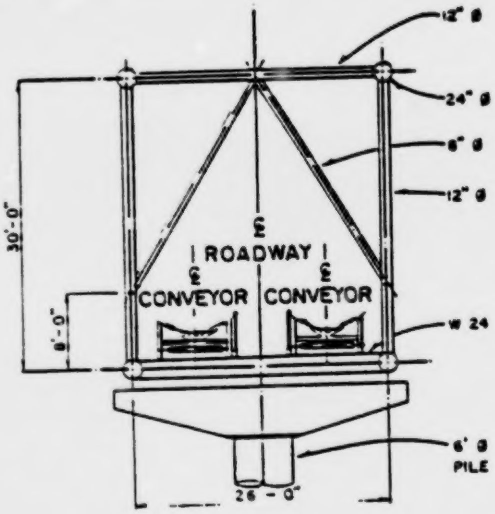
Figure - Bridge Profile

Cook Inlet

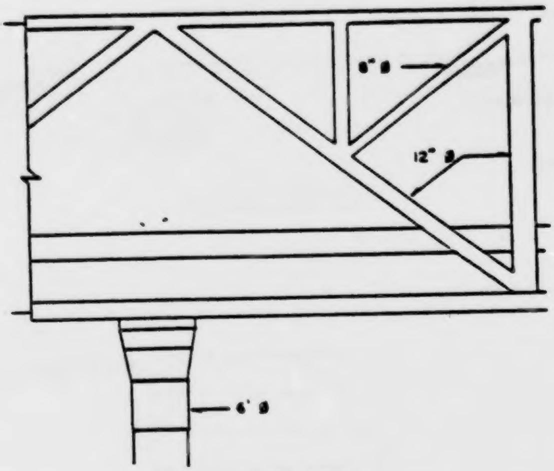
Diamond Chuitna Project
Kenai Peninsula Borough

Sheet 10 of 15




12" ø
24" ø
8" ø
12" ø
30'-0"
℄
ROADWAY
℄
CONVEYOR
℄
CONVEYOR
8'-0"
W 24
6' ø
PILE
26 - 0"

FRONT VIEW

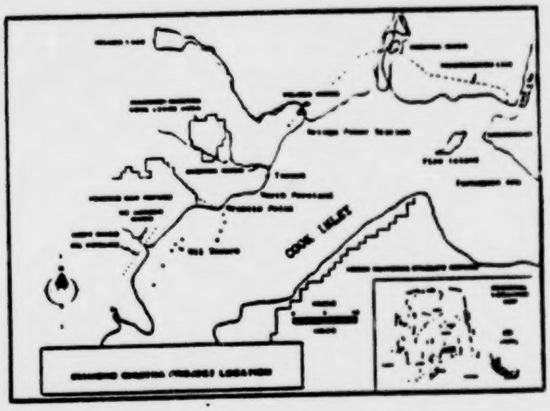


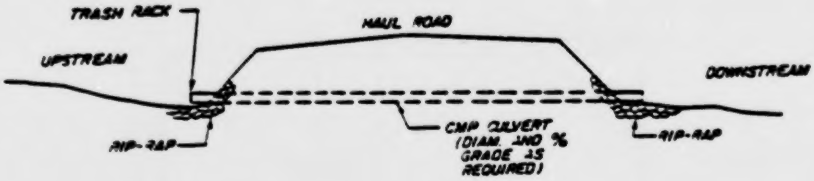
RIGHT VIEW

Trestle and Pier

Cook Inlet
Diamond Chuitna Project
Kenai Peninsula Borough

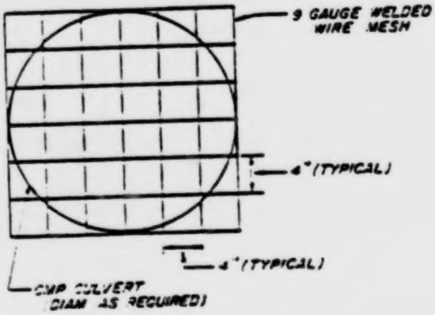
Sheet 11 of 15




TRASH RACK
HAUL ROAD
UPSTREAM
DOWNSTREAM
RIP-RAP
CMP CULVERT (DIAM. AND % GRADE AS REQUIRED)
RIP-RAP

(NOT TO SCALE)

CROSS SECTION


9 GAUGE WELDED WIRE MESH
4" (TYPICAL)
4" (TYPICAL)
CMP CULVERT (DIAM AS REQUIRED)

(NOT TO SCALE)

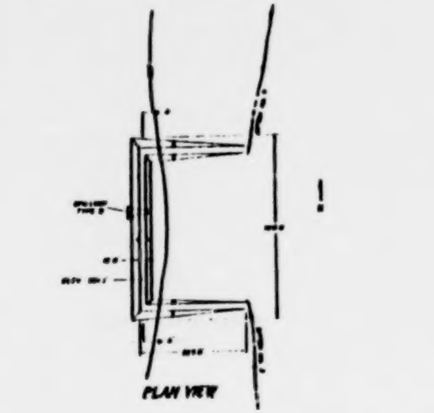
TRASH RACK DETAIL

Culvert Installation

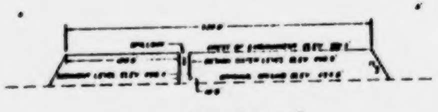
Cook Inlet

Diamond Chuitna Project
Kenai Peninsula Borough

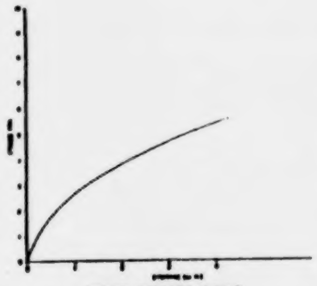
Sheet 12 of 15



PLAN VIEW



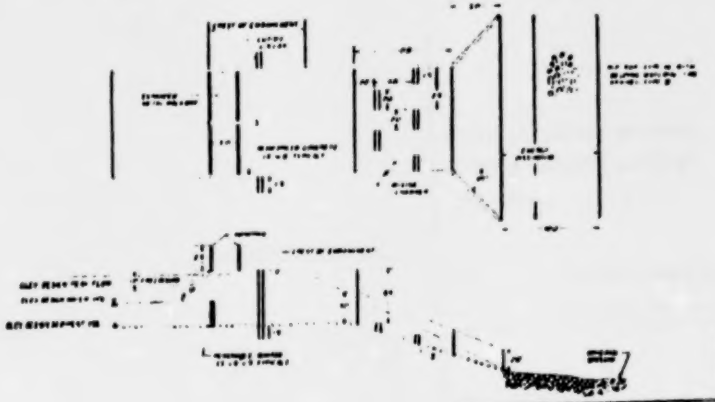
EMBANKMENT PROFILE A-A'



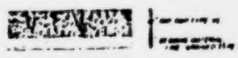
STAGE STORAGE CURVE

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]				

STORAGE CAPACITY TABLE



TYPICAL PRINCIPAL/EMERGENCY SPILLWAY DETAILS

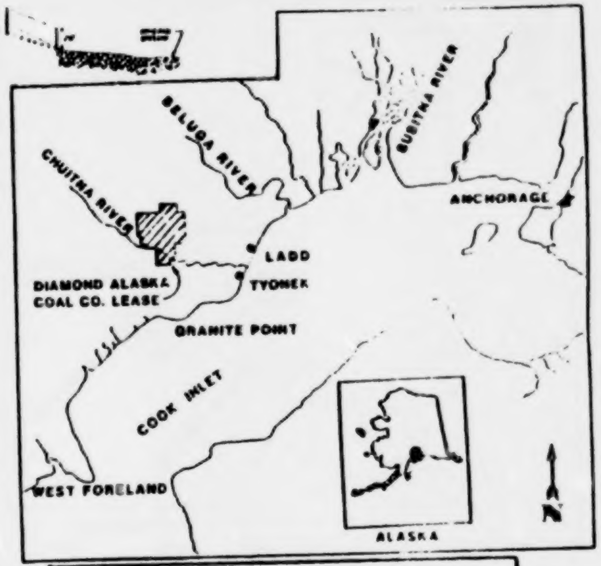


TYPICAL RIP-RAP/BEDDING MATERIAL

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]		
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]		[illegible]

DESIGN CRITERIA

NOTE: FOR POND LOCATION, SEE "DRAINAGE AND SEDIMENT CONTROL PLAN"



SUSITNA RIVER
BELUGA RIVER
CHUITNA RIVER
ANCHORAGE
LADD
TYONEK
DIAMOND ALASKA COAL CO. LEASE
GRANITE POINT
COOK INLET
WEST FORELAND
ALASKA
N

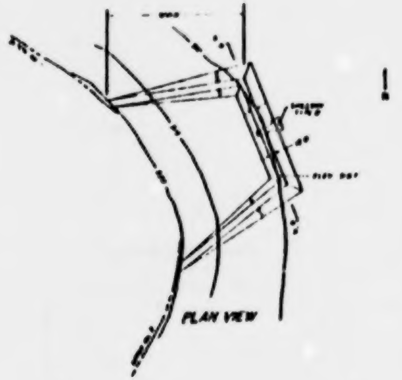
Map Sediment Pond No. 1

Cook Inlet

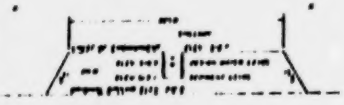
Diamond Chuitna Project

Kenai Peninsula Borough

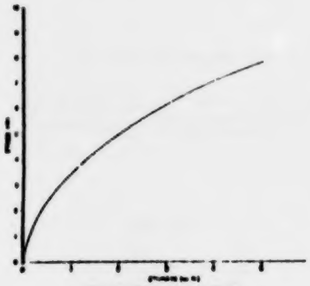
Sheet 13 of 15



PLAN VIEW

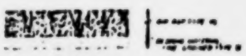


EMBANKMENT PROFILE A-A



STAGE STORAGE CURVE

TYPICAL PRINCIPAL/EMERGENCY SPILLWAY DETAILS



TYPICAL RIP-RAP/BEDDING MATERIAL

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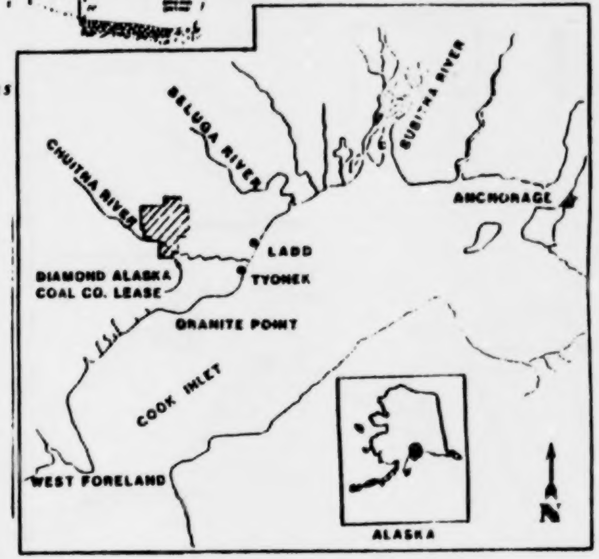
STORAGE CAPACITY TABLE

[illegible]

DESIGN CRITERIA

NOTE: FOR POND LOCATIONS, SEE "DRAINAGE AND SEDIMENT CONTROL PLAN"


SUSITNA RIVER
BELUGA RIVER
CHUITNA RIVER
ANCHORAGE
LADD
TYONEK
DIAMOND ALASKA COAL CO. LEASE
GRANITE POINT
COOK INLET
WEST FORELAND
ALASKA
N

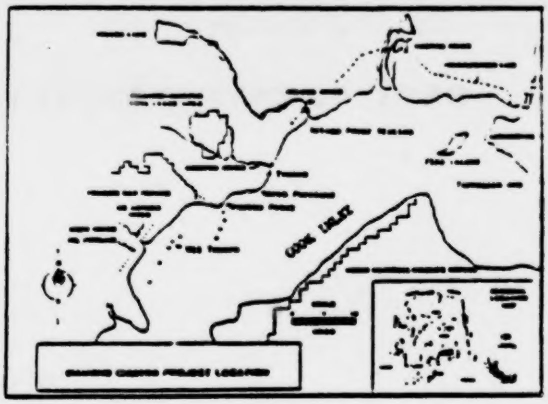
Map Sediment Pond No. 2

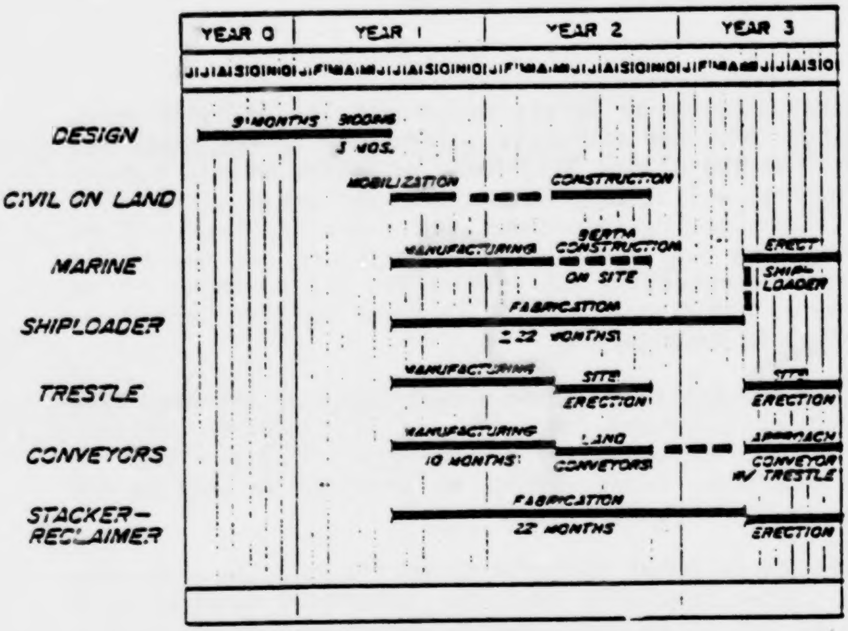
Cook Inlet

Diamond Chuitna Project

Kenai Peninsula Borough

Sheet 14 of 15





Construction Schedule

Cook Inlet
Diamond Chuitna Project
Kenai Peninsula Borough

Sheet 15 of 15

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

STEVE COWPER, GOVERNOR

Telephone: (907) 465-2600
Address:

P.O. Box O
Juneau, AK 99811-1800

NOTICE OF APPLICATION
FOR
STATE WATER QUALITY CERTIFICATION

Any applicant for a Federal license or permit to conduct any activity which may result in any discharge into the navigable waters must first apply for and obtain certification from the Alaska Department of Environmental Conservation that any such discharge will comply with the Clean Water Act of 1977 (PL 95-217), the Alaska Water Quality Standards and other applicable State laws. By Agreement between the U.S. Army Corps of Engineers and the Alaska Department of Environmental Conservation application for a Department of the Army Permit may also serve as application for State Water Quality Certification when such certification is necessary.

Notice is hereby given that the application for a Department of the Army Permit described in the Corps of Engineers Public Notice No. 2-850259, 2-850260 & 2-850 also serves as application for State Water Quality Certification from the Alaska Department of Environmental Conservation, as provided in Section 401 of the Clean Water Act of 1977 (PL 95-217).

The Department will review the proposed activity to insure that any discharge to waters of the United States resulting from the referenced project will comply with the Clean Water Act of 1977 (PL 95-217) the Alaska Water Quality Standards and other applicable State laws.

Any person desiring to comment on the water quality impacts of the proposed project may do so by writing to:

Alaska Department of Environmental Conservation
3601 C Street, Suite 1350
Anchorage, Alaska 99503
Telephone: 563-6529

within 30 days of publication of this notice.

STATE OF ALASKA

OFFICE OF THE GOVERNOR

OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF GOVERNMENTAL COORDINATION

STEVE COWPER, GOVERNOR

CENTRAL OFFICE

P.O. BOX AW
JUNEAU, ALASKA 99811-0165
PHONE: (907) 465-3562

STATE OF ALASKA

DIVISION OF GOVERNMENTAL COORDINATION

Notice of Application for
Certification of Consistency with the
Alaska Coastal Management Program

Notice is hereby given that a request is being filed with the Division of Governmental Coordination for concurrence, as provided in Section 307 (c)(3) of the Coastal Zone Management Act of 1972, as amended [P.L. 94-370; 90 Stat. 1013; 16 U.S.C. 1456 (c)(3)], that the project described in the Corps of Engineers Public Notice No. SEE BELOW, will comply with the Alaska Coastal Management Program and that the project will be conducted in a manner consistent with that program.

Any person desiring to present views pertaining to the project's compliance or consistency with the Alaska Coastal Management Program may do so by providing his views in writing to the Division of Governmental Coordination, Office of Management and Budget, Pouch AW, Juneau, AK 99811, within 30 days of publication of this notice.

Attachment 2

2-850259, 2-850260 and 2-850261

DRAFT

APPENDIX C

EVALUATION OF THE DISCHARGE OF DREDGED AND FILL MATERIAL IN ACCORDANCE WITH SECTION 404(B)(1) GUIDELINES

SUBPART A - GENERAL

Dredged and fill material should not be discharged into the aquatic ecosystem unless it can be demonstrated that such a discharge would not have an unacceptable adverse impact either individually or in combination with other known and/or probable impacts of other activities affecting the ecosystem of concern.

A permit for the discharge of dredged or fill material from the Corps of Engineers (Corps), Alaska District, is required under Section 404 of the Clean Water Act. The Corps approves discharges at particular sites through application of the 404(b)(1) guidelines and a public interest review. EPA reviews the permit application and provides comments to the Corps. The Corps, in applying the 404(b)(1) guidelines, must determine the potential short-term or long-term effects of the proposed discharge on the physical, chemical, and biological components of the aquatic environment.

SUBPART B - COMPLIANCE WITH THE GUIDELINES

The proposed Diamond Chuitna Coal Project would involve discharge of fill material into special aquatic habitats for mine development and for construction of mine site facilities. The proposed project and alternatives evaluated for impact analysis are discussed in Chapters two and three of the final EIS. There are no project development alternatives which achieve the project purpose that do not involve discharge of fill material into waters of the United States.

In addition to being evaluated under the 404(b)(1) guidelines, the discharge of fill material will have to be certified as being in compliance with state water quality and toxic effluent standards pursuant to Section 307 of the Clean Water Act (40 CFR 219). No threatened or endangered species, critical habitat areas or marine sanctuary would be impacted by the proposed project as discussed in chapter four of the final EIS.

As determined in Subparts C through G of this evaluation and as discussed in chapter five of the final EIS, the proposed project or any of the action alternatives, would contribute to adverse impacts on waters of the United States including adverse effects on life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values.

Pertinent information about primary, secondary and cumulative impacts of the proposed project and alternatives related to alterations of: substrate; water circulation, fluctuation and salinity; turbidity/suspended particulates; structure and function of aquatic ecosystems and organisms, is contained in chapter five of the final EIS. In addition, discussions of water quality impacts within the mixing zone of the discharge area is also found in Chapter five of the final EIS.

BPARTS C THROUGH F

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Potential impacts on cal and chemical characteristics of the aquatic ecosystem, bcharacteristics of the aquatic ecosystem, special aquatic sitesn use characteristics are found in chapter five of the final EIS

SUBPART G

The source and type ge material that would be used to develop the proposed project or alternatives is described in chapters two and four of the final EI fill that would be used to construct roads and other facilities very unlikely to be contaminated or contain natural toxic substarefore, testing of gravel fill material would not be necessary. Tal characteristics of mine overburden that would be excavated aeplaced in the mine pit has been examined in detail in project baudies and summarized in Section 4.3.1.4 of the final EIS. Mine oveould be unlikely to contain toxic materials. Nevertheless, continoring of overburden chemistry, especially that portion of the overbbe replaced on the ground surface during reclamation would bed during mine operation.

SUBPART H

Appropriate and pracps have been identified in Chapters two and six which would minimizel adverse impacts of the discharge on the aquatic ecosystem. he mitigative measures which avoid or reduce project impacts haveorporated into each action alternative. Additional mitigativs will be required as part of the Corps permit. With the ad appropriate mitigation measures, many of which are discussed in thes, the discharge of dredged or fill material in association with thent of this project would not cause significant degradation of the whe United States.

Appendix D

Proposed Final NPDES Permits

APPENDIX D
PROPOSED FINAL NPDES PERMITS

This appendix contains the four NPDES permits which EPA proposes to issue for the Diamond Chuitna Coal Project. Written comments received during the public review period for the draft NPDES permits are included within comment letters from the Alaska Division of Governmental Coordination and the Trustees for Alaska, located in Chapter 10.0 of this final EIS. The responses to draft EIS comments. As a result of EPA's review of the permit-related comments, appropriate revisions were made to the draft NPDES permits. These revisions are noted in the responses to comments and are reflected in the following proposed final NPDES permits. These proposed final NPDES permits are subject to final review and certification by the State of Alaska Department of Environmental Conservation pursuant to Section 401 of the Clean Water Act and a review and determination of consistency with the approved Alaska Coastal Management Program by the State of Alaska, Office of Management and Budget, Division of Governmental Coordination.

Permit No.: AK-004357-5
Application No.: AK-004357-5

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

DIAMOND ALASKA COAL COMPANY
(Diamond Chuitna Mine)

is authorized to discharge from a facility located near the village of Tyonek, Alaska, to receiving waters named Lone Creek and Chuitna River, and unnamed tributaries to the Chuitna River, in accordance with discharge points, effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective

This permit and the authorization to discharge shall expire at midnight,

Signed this day of

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Director, Water Division, Region 10
U.S. Environmental Protection Agency

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Attachment A: 40 CFR 125, Subpart K, §125.104(a) and (b)

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I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Specific Limitations and Monitoring Requirements.

During the term of this permit, the permittee is authorized to discharge from outfall numbers 001-018, in accordance with the limitations and requirements specified below.

1. Effluent Limitations During Baseflow Conditions

   a. Discharges from outfalls 001-018 shall comply with the following limitations and monitoring requirements during baseflow conditions:

Effluent Characteristics	Effluent Limitations		Monitoring Requirements	
	Avg. Monthly	Max. Daily	Frequency	Sample Type
Total Iron	--	1.0 mg/l	weekly	grab
Total Suspended Solids (TSS)	35.0 mg/l	70.0 mg/l	weekly	grab
Settleable Solids (SS), ml/l	--	--	weekly	grab
Turbidity, NTU	--	--	weekly	grab
Receiving Stream Turbidity, NTU				
-Upstream of Outfall	--	--	weekly	grab
-500 feet downstream of outfall	--	--	weekly	grab
pH	Not less than 6.5 standard units, nor greater than 8.5 standard units.		weekly	grab
Effluent Flow (mgd)	--	--	weekly	instantaneous
Receiving Stream Flow (cfs)	--	--	weekly	instantaneous
Boron	--	--	monthly	grab
Nickel	--	--	monthly	grab
Manganese	--	--	monthly	grab
Ammonia (nitrogen)	--	--	monthly	grab
Zinc	--	--	monthly	grab

There shall be no discharge of floating solids, visible foam or oil and grease which causes a sheen on the surface of the receiving water.

   b. Discharges from outfalls 017 and 018 shall also comply with the following limitations and monitoring requirements, during baseflow conditions:

Effluent Characteristics	Effluent Limitations		Monitoring Requirements	
	Avg. Monthly	Max. Daily	Frequency	Sample Type
Total Hydrocarbons*	--	0.015 mg/l	weekly	grab

*Total Hydrocarbons shall be measured by Standard Method 503(B).

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2. Effluent Limitations During Precipitation Events (Alternate Limitations)

a. Any discharge (or increase in the volume of a discharge) from outfalls 001 - 018 caused by precipitation within any 24-hour period less than or equal to 5.10 inches (or snowmelt of equivalent depth) shall comply with the following limitations and monitoring requirements:

Effluent Characteristics	Effluent Limitations Max. Daily	Monitoring Requirements Frequency	Sample Type
Effluent Flow (mgd)	N/A	weekly*	instantaneous
Receiving Stream Flow (cfs)	N/A	weekly*	instantaneous
SS	0.5 ml/l	daily	grab
pH	not less than 6.5 standard units, nor greater than 8.5 standard units	daily	grab
TSS	N/A	weekly*	grab
Oil and Grease	N/A	weekly*	grab
Total Iron	N/A	weekly*	grab

[* These parameters shall be measured at least once during a precipitation event when these alternate limitations apply.]

There shall be no discharge of floating solids, visible foam or oil and grease which causes a sheen on the surface of the receiving water.

b. Any discharge (or increase in the volume of a discharge) from outfalls 001 - 018 caused by precipitation within any 24-hour period greater than 5.10 inches (or snowmelt of equivalent depth) shall comply with the following limitations and monitoring requirements:

Effluent Characteristics	Effluent Limitations Max. Daily	Monitoring Requirements Frequency	Sample Type
Effluent Flow (mgd)	N/A	weekly*	instantaneous
Receiving Stream Flow (cfs)	N/A	weekly*	instantaneous
pH	not less than 6.5 standard units, nor greater than 8.5 standard units.	daily	grab
TSS	N/A	weekly*	grab
SS	N/A	weekly*	grab
Total Iron	N/A	weekly*	grab

[* These parameters shall be measured at least once during a precipitation event when these alternate effluent limitations apply.]

There shall be no discharge of floating solids, visible foam or oil and grease which causes a sheen on the surface of the receiving water.

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c. The alternate precipitation limitations and monitoring requirements in Parts I.A.2.a. or b. begin when a discharge (or an increase in the volume of a discharge) is caused by precipitation (or snowmelt of equivalent depth), and shall continue at each outfall following cessation of the precipitation event for the following time periods. After this time period elapses, the baseflow condition (Part I.A.1.) apply unless another precipitation event causes a discharge (or an increase in discharge) from the sedimentation ponds.

Outfall Number	Time Period (days)
001	1
002	1
003	1
004	1
005	2
006	2
007	2
008	2
009	2
010	2
011	2
012	2
013	2
014	2
015	2
016	2
017	2
018	2

For the purpose of this part of the permit, the term "cessation of the precipitation event" is defined as when the discharge flow rate decreases to the flow rate preceeding the start of the precipitation event.

The permittee has the burden of proof to show that the discharge (or increase in discharge) resulted from a precipitation event.

B. Other Permit Requirements.

1. Watershed Monitoring Program

A monitoring program shall be established in order to define relationships between soil type, vegetation, and precipitation runoff, and the rate and quality of discharge from settling ponds for the four seasons of the year. The resulting watershed hydrographs should provide documentation for determining the "time of concentration" of the area contributing runoff to the sedimentation pond. The "time of concentration" is the time it takes for the last of the runoff from the hydraulically most remote point in the drainage area to reach the inlet of sedimentation pond. The program shall include provisions for monitoring influent to the sedimentation pond and precipitation.

The permittee shall submit details of this program to EPA and the Alaska Department of Environmental Conservation (ADEC) for review and approval within 90 days of the effective date of this permit.

2. Precipitation Monitoring Program

The permittee shall keep a record of all precipitation events. This record shall include as a minimum dates, time, and precipitation amounts for each precipitation event. A copy of this record shall be submitted with the monthly discharge monitoring reports (DMR) see Part II.C.

3. Mining Plans

By December 31st of every year, the permittee shall submit to EPA and ADEC a map(s) showing those areas that have been mined, those areas to be mined for the next year, and the sedimentation ponds affected by mining operations. This map should also indicate the size of the area mined (or to be mined) in acres.

4. Use of Chemicals, Detergents, Solvents or Degreasers

Within six months of the effective date of this permit, the permittee shall submit to EPA and ADEC for review and approval a list of chemicals, detergents, solvents or degreasers that are used to wash down equipment or are used in the maintenance shops which may enter the sedimentation ponds through runoff.

5. Best Management Practices (BMP) Plan

Within one year of the effective date of this permit or three months before construction begins (whichever date occurs first), the permittee shall submit a BMP plan to EPA for review and approval. This plan shall be developed in accordance with 40 CFR 125.104 (see Attachment A), and shall also consider the BMP for water management presented in the EPA "Development Document for Effluent Limitations and Standards for the Coal Mining Point Source Category" (EPA 440/1-82/057, October 1982, pages 362, 367-376).

The BMP plan, upon approval shall become part of this permit. A copy of the BMP plan shall be kept at the facility.

The permittee shall amend the BMP plan whenever there is a change in facility design, construction, operation, or maintenance which materially affects the facility's potential for discharge of significant amounts of hazardous or toxic pollutants to waters of the United States.

If the BMP program proves to be ineffective in achieving the general objective of preventing the release of significant amounts of toxic or hazardous pollutants to waters of the United States and the specific objectives and requirements of the BMP plan, the permit and/or the BMP program shall be subject to modification to incorporate revised BMP requirements.

6. Mixing Zones

The mixing zones for outfalls 001 to 018 for meeting the Alaska Water Quality Standards for turbidity are as follows:

> The downstream edge of the mixing zone shall not exceed 500 feet from the outfall.

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C. Definitions.

1. "Average monthly discharge limitation" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

2. "Baseflow Conditions" refers to the sustained flow of water in rivers and streams resulting primarily from groundwater seepage into the water courses.

3. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

4. "Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

5. A "Grab" sample is a single sample or measurement taken at a specific time or over as short a period of time as is feasible.

6. "Maximum daily discharge limitation" means the highest allowable "daily discharge."

7. "Precipitation Event" includes any period of time for which there has been measurable precipitation, and periods of snowmelt (occurring at any time there is snow on the ground within the watershed and the temperature is above 0°C).

8. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

9. A "24-hour composite" sample shall mean a flow-proportioned mixture of not less than 8 discrete aliquots. Each aliquot shall be a grab sample of not less than 100 ml and shall be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.

10. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

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II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under Part I shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.

B. Monitoring Procedures.

1. Settleable Solids. Fill an Imhoff cone to the one-liter mark with a thoroughly mixed sample. Allow to settle undisturbed for 45 minutes. Gently stir along the inside surface of the cone with a stirring rod. Allow to settle undisturbed for 15 minutes longer. Record the volume of settled material in the cone as milliliters per liter. Where a separation of settleable and floating material occurs, do not include the floating material in the reading.

2. Other Parameters. Monitoring for other parameters must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

C. Reporting of Monitoring Results. Monitoring results shall be summarized each month on the Discharge Monitoring Report (DMR) form (EPA No. 3320-1). The reports shall be submitted monthly and are to be postmarked by the 10th day of the following month. Legible copies of these, and all other reports, shall be signed and certified in accordance with the requirements of Part IV.H., Signatory Requirements, and submitted to the Director, Water Division and the State agency at the following addresses:

original to: United States Environmental Protection Agency (EPA)
Region 10
1200 Sixth Avenue, WD-135
Seattle, Washington 98101

copy to: Alaska Department of Environmental Conservation (ADEC)
Southcentral Region
3601 "C" Street, Suite 1350
Anchorage, Alaska 99503

D. Additional Monitoring by the Permittee. If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated.

E. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

F. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director or ADEC at any time. Data collected on-site, copies of Discharge Monitoring Reports, and a copy of this NPDES permit must be maintained on-site during the duration of activity at the permitted location.

G. Twenty-four Hour Notice of Noncompliance Reporting.

1. The following occurrences of noncompliance shall be reported by telephone within 24 hours from the time the permittee becomes aware of the circumstances:
    a. Any noncompliance which may endanger health or the environment;
    b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G., Bypass of Treatment Facilities.);
    c. Any upset which exceeds any effluent limitation in the permit (See Part III.H., Upset Conditions.); or
    d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit to be reported within 24 hours.

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2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

    a. A description of the noncompliance and its cause;

    b. The period of noncompliance, including exact dates and times;

    c. The estimated time noncompliance is expected to continue if it has not been corrected; and

    d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Compliance Section in Seattle, Washington, by phone, (206) 442-1213.

4. Reports shall be submitted to the addresses in Part II.C., Reporting of Monitoring Results.

H. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.C. are submitted. The reports shall contain the information listed in Part II.G.2.

I. Inspection and Entry. The permittee shall allow the Director, ADEC, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

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III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions.

1. Civil Penalty. The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be subject to a civil penalty, not to exceed $25,000 per day for each violation.

2. Criminal Penalties:

a. Negligent Violations. The Act provides that any person who negligently violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or by both.

b. Knowing Violations. The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or by both.

c. Knowing Endangerment. The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. A person which is an organization shall, upon conviction of violating this subparagraph, be subject to a fine of not more than $1,000,000.

d. False Statements. The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this Act or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under this Act, shall upon conviction, be punished by a fine of not more that $10,000, or by imprisonment for not more than 2 years, or by both.

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Except as provided in permit conditions in Part III.G., Bypass of Treatment Facilities and Part III.H., Upset Conditions, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

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G. Bypass of Treatment Facilities:

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2 and 3 of this section.

2. Notice:

   a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.

   b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting.

3. Prohibition of bypass.

   a. Bypass is prohibited and the Director or ADEC may take enforcement action against a permittee for a bypass, unless:

      (1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

      (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

      (3) The permittee submitted notices as required under paragraph 2 of this section.

   b. The Director and ADEC may approve an anticipated bypass, after considering its adverse effects, if the Director and ADEC determine that it will meet the three conditions listed above in paragraph 3.a. of this section.

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H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred and that the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting; and

   d. The permittee complied with any remedial measures required under Part III.D., Duty to Mitigate.

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

IV. GENERAL REQUIREMENTS

A. Changes in Discharge of Toxic Substances. Notification shall be provided to the Director and ADEC as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. One hundred micrograms per liter (100 ug/l);

   b. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

   c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d. The level established by the Director in accordance with 40 CFR 122.44(f).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. Five hundred micrograms per liter (500 ug/l);

   b. One milligram per liter (1 mg/l) for antimony;

   c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d. The level established by the Director in accordance with 40 CFR 122.44(f).

B. Planned Changes. The permittee shall give notice to the Director and ADEC as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29(b); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part IV.A.1.

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C. Anticipated Noncompliance. The permittee shall also give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

D. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

E. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit.

F. Duty to Provide Information. The permittee shall furnish to the Director and ADEC, within a reasonable time, any information which the Director or ADEC may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director or ADEC, upon request, copies of records required to be kept by this permit.

G. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director or ADEC, it shall promptly submit such facts or information.

H. Signatory Requirements. All applications, reports or information submitted to the Director and ADEC shall be signed and certified.

1. All permit applications shall be signed as follows:

    a. For a corporation: by a responsible corporate officer.

    b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

    c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director or ADEC shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

    a. The authorization is made in writing by a person described above and submitted to the Director and ADEC, and

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b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to authorization. If an authorization under paragraph IV.H.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph IV.H.2. must be submitted to the Director and ADEC prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. Availability of Reports. Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Director and ADEC. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

K. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

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L. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

N. State Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Act.

ATTACHMENT A

§ 125.104 Best management practices programs.

(a) BMP programs shall be developed in accordance with good engineering practices and with the provisions of this subpart.

(b) The BMP program shall:

(1) Be documented in narrative form, and shall include any necessary plot plans, drawings or maps;

(2) Establish specific objectives for the control of toxic and hazardous pollutants.

(i) Each facility component or system shall be examined for its potential for causing a release of significant amounts of toxic or hazardous pollutants to waters of the United States due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(ii) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the program should include a prediction of the direction, rate of flow and total quantity of toxic or hazardous pollutants which could be discharged from the facility as a result of each condition or circumstance;

(3) Establish specific best management practices to meet the objectives identified under paragraph (b)(2) of this section, addressing each component or system capable of causing a release of significant amounts of toxic or hazardous pollutants to the waters of the United States;

(4) *The BMP program:* (i) May reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP program by reference;

[*Comment:* EPA has proposed section 311(j)(1)(c) regulations (43 FR 39276) which require facilities subject to NPDES to develop and implement SPCC plans to prevent discharges of reportable quantities of designated hazardous substances. While Subpart K requires only procedural activities and minor construction, the proposed 40 CFR Part 151 (SPCC regulations) are more stringent and comprehensive with respect to their requirements for spill prevention. In developing BMP programs in accordance with Subpart K, owners or operators should also consider the requirements of proposed 40 CFR Part 151 which may address many of the same areas of the facility covered by this Subpart.]

(ii) Shall assure the proper management of solid and hazardous waste in accordance with regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) (40 U.S.C. 6901 *et seq*). Management practices required under RCRA regulations shall be expressly incorporated into the BMP program; and

(iii) Shall address the following points for the ancillary activities in § 125.102:

(A) Statement of policy;
(B) Spill Control Committee;
(C) Material inventory;
(D) Material compatibility;
(E) Employee training;
(F) Reporting and notification procedures;
(G) Visual inspections;
(H) Preventive maintenance;
(I) Housekeeping; and
(J) Security.

[*Comment:* Additional technical information on BMPs and the elements of a BMP program is contained in a publication entitled "NPDES Best Management Practices Guidance Document." Copies may be obtained by written request to Edward A. Kramer (EN-336), Office of Water Enforcement, Environmental Protection Agency, Washington, DC. 20460.]

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Permit No.: AK-004685-0
Application No.: AK-004685-0

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

TIDEWATER SERVICES CORPORATION
(Ladd Coal Loading Facility)
Diamond Shamrock Chuitna Coal Joint Venture

is authorized to discharge from the Ladd coal loading facility located near the village of Tyonek, Alaska, to receiving waters named Cook Inlet, in accordance with the discharge point, effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective

This permit and the authorization to discharge shall expire at midnight,

Signed this day of

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Director, Water Division, Region 10
U.S. Environmental Protection Agency

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Attachment A: 40 CFR 125, Subpart K, §125.104(a) and (b)

I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Specific Limitations and Monitoring Requirements.

During the effective term of this permit, the permittee is authorized to discharge from outfall 001 (sediment pond) in accordance with the following:

1. Baseflow Conditions

Discharges shall comply with the following limitations and monitoring requirements during baseflow conditions:

Effluent Characteristics	Effluent Limitations Avg. Monthly	Effluent Limitations Max. Daily	Monitoring Requirements Frequency	Monitoring Requirements Sample Type
Total Hydrocarbons*	--	0.015 mg/l	weekly	grab
Total Iron	3.0 mg/l	6.0 mg/l	weekly	grab
Total Suspended Solids (TSS)	35.0 mg/l	70.0 mg/l	weekly	grab
Settleable Solids (SS)	--	--	weekly	grab
pH	Not less than 6.0 standard units, nor greater than 9.0 standard units		weekly	grab
Effluent Flow (mgd)	--	--	weekly	instantaneous
Receiving Stream Flow (cfs)	--	--	weekly	instantaneous

There shall be no discharge of floating solids, visible foam or oil and grease which causes a sheen on the surface of the receiving water.

*Total Hydrocarbons shall be measured by Standard Method 503(B).

2. Precipitation Events (Alternate Limitations)

a. Any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period less than or equal to 5.10 inches (or snowmelt of equivalent depth) shall comply with the following limitations and monitoring requirements:

Effluent Characteristics	Effluent Limitations Maximum Daily	Monitoring Requirements Frequency	Monitoring Requirements Sample Type
Effluent Flow (mgd)	N/A	weekly*	instantaneous
Receiving Stream Flow (cfs)	N/A	weekly*	instantaneous
SS	0.5 ml/l	weekly	grab
pH	Not less than 6.0 standard units, nor greater than 9.0 standard units.	weekly	grab

There shall be no discharge of floating solids, visible foam or oil and grease which causes a sheen on the surface of the receiving water.

[* Flow shall be measured at least once during the period when the alternate limitations apply.]

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b. Any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period greater than 5.10 inches (or snowmelt of equivalent depth) shall comply with the following limitations and monitoring requirements:

Effluent Characteristics	Effluent Limitations	Monitoring Requirements	
	Maximum Daily	Frequency	Sample Type
Effluent Flow (mgd)	N/A	weekly*	instantaneous
Receiving Stream Flow (cfs)	N/A	weekly*	instantaneous
pH	Not less than 6.0 standard units, nor greater than 9.0 standard units.	weekly	grab

There shall be no discharge of floating solids, visible foam or oil and grease which causes a sheen on the surface of the receiving water.

[* Flow shall be measured at least once during the period when the alternate limitations apply.]

c. The alternate precipitation limitations and monitoring requirements in Parts I.A.2.a. or b. begin when a discharge (or an increase in the volume of a discharge) is caused by precipitation (or snowmelt of equivalent depth), and shall continue two days following cessation of the precipitation event.

For the purpose of this part of the permit, the term "cessation of the precipitation event" is defined as when the discharge flow rate decreases to the flow rate preceeding the start of the precipitation event.

The permittee has the burden of proof to show that the discharge (or increase in discharge) resulted from a precipitation event.

B. Other Permit Requirements.

1. Watershed Monitoring Program

A monitoring program shall be established in order to define relationships between soil type, vegetation, and precipitation runoff, and the rate and quality of discharge from settling ponds for the four seasons of the year. The resulting watershed hydrographs should provide documentation for determining the "time of concentration" of the area contributing runoff to the sedimentation pond. The "time of concentration" is the time it takes for the last of the runoff from the hydraulically most remote point in the drainage area to reach the inlet of sedimentation pond. The program shall include provisions for monitoring influent to the sedimentation pond and precipitation.

The permittee shall submit details of this program to EPA and the Alaska Department of Environmental Conservation (ADEC) for review and approval within 90 days of the effective date of this permit.

2. Precipitation Monitoring Program

The permittee shall keep a record of all precipitation events. This record shall include as a minimum dates, time, and precipitation amounts for each precipitation event. A copy of this record shall be submitted with the monthly discharge monitoring reports (DMR) see Part II.C.

3. Sanitary Waste

The discharge of sanitary waste from the Ladd Coal Loading Facility to any waters of the United States is not authorized.

4. Use of Chemicals, Detergents, Solvents or Degreasers

Within six months of the effective date of this permit, the permittee shall submit to EPA and ADEC for review and approval a list of chemicals, detergents, solvents or degreasers that are used to wash down equipment or are used in the maintenance shops which may enter the sedimentation ponds through runoff.

5. Best Management Practices (BMP) Plan

Within one year of the effective date of this permit or three months before construction begins (whichever date occurs first), the permittee shall submit a BMP plan to EPA for review and approval. This plan shall be developed in accordance with 40 CFR 125.104 (see Attachment A), and shall also consider the BMP for water management presented in the EPA "Development Document for Effluent Limitations and Standards for the Coal Mining Point Source Category" (EPA 440/1-82/057, October 1982, pages 362, 367-376).

The BMP plan, upon approval shall become part of this permit. A copy of the BMP plan shall be kept at the facility.

The permittee shall amend the BMP plan whenever there is a change in facility design, construction, operation, or maintenance which materially affects the facility's potential for discharge of significant amounts of hazardous or toxic pollutants to waters of the United States.

If the BMP program proves to be ineffective in achieving the general objective of preventing the release of significant amounts of toxic or hazardous pollutants to waters of the United States and the specific objectives and requirements of the BMP plan, the permit and/or the BMP program shall be subject to modification to incorporate revised BMP requirements.

C. Definitions.

1. "Average monthly discharge limitation" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

2. "Baseflow Conditions" refers to the sustained flow of water in rivers and streams resulting primarily from groundwater seepage into the water courses.

3. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

4. "Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

5. A "Grab" sample is a single sample or measurement taken at a specific time or over as short a period of time as is feasible.

6. "Maximum daily discharge limitation" means the highest allowable "daily discharge."

7. "Precipitation Event" includes any period of time for which there has been measurable precipitation, and periods of snowmelt (occurring at any time there is snow on the ground within the watershed and the temperature is above 0°C).

8. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

9. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under Part I shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.

B. Monitoring Procedures.

1. Settleable Solids. Fill an Imhoff cone to the one-liter mark with a thoroughly mixed sample. Allow to settle undisturbed for 45 minutes. Gently stir along the inside surface of the cone with a stirring rod. Allow to settle undisturbed for 15 minutes longer. Record the volume of settled material in the cone as milliliters per liter. Where a separation of settleable and floating material occurs, do not include the floating material in the reading.

2. Other Parameters. Monitoring for other parameters must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

C. Reporting of Monitoring Results. Monitoring results shall be summarized each month on the Discharge Monitoring Report (DMR) form (EPA No. 3320-1). The reports shall be submitted monthly and are to be postmarked by the 10th day of the following month. Legible copies of these, and all other reports, shall be signed and certified in accordance with the requirements of Part IV.H., Signatory Requirements, and submitted to the Director, Water Division and the State agency at the following addresses:

original to: United States Environmental Protection Agency (EPA)
Region 10
1200 Sixth Avenue, WD-135
Seattle, Washington 98101

copy to: Alaska Department of Environmental Conservation (ADEC)
Southcentral Region
3601 "C" Street, Suite 1350
Anchorage, Alaska 99503

D. Additional Monitoring by the Permittee. If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated.

E. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

F. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director or ADEC at any time. Data collected on-site, copies of Discharge Monitoring Reports, and a copy of this NPDES permit must be maintained on-site during the duration of activity at the permitted location.

G. Twenty-four Hour Notice of Noncompliance Reporting.

1. The following occurrences of noncompliance shall be reported by telephone within 24 hours from the time the permittee becomes aware of the circumstances:
    a. Any noncompliance which may endanger health or the environment;
    b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G., Bypass of Treatment Facilities.);
    c. Any upset which exceeds any effluent limitation in the permit (See Part III.H., Upset Conditions.); or
    d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit to be reported within 24 hours.

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2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

    a. A description of the noncompliance and its cause;

    b. The period of noncompliance, including exact dates and times;

    c. The estimated time noncompliance is expected to continue if it has not been corrected; and

    d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Compliance Section in Seattle, Washington, by phone, (206) 442-1213.

4. Reports shall be submitted to the addresses in Part II.C., Reporting of Monitoring Results.

H. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.C. are submitted. The reports shall contain the information listed in Part II.G.2.

I. Inspection and Entry. The permittee shall allow the Director, ADEC, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

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III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions.

1. Civil Penalty. The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be subject to a civil penalty, not to exceed $25,000 per day for each violation.

2. Criminal Penalties:

a. Negligent Violations. The Act provides that any person who negligently violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or by both.

b. Knowing Violations. The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or by both.

c. Knowing Endangerment. The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. A person which is an organization shall, upon conviction of violating this subparagraph, be subject to a fine of not more than $1,000,000.

d. False Statements. The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this Act or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under this Act, shall upon conviction, be punished by a fine of not more that $10,000, or by imprisonment for not more than 2 years, or by both.

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Except as provided in permit conditions in Part III.G., Bypass of Treatment Facilities and Part III.H., Upset Conditions, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

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G. Bypass of Treatment Facilities:

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2 and 3 of this section.

2. Notice:

   a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.

   b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting.

3. Prohibition of bypass.

   a. Bypass is prohibited and the Director or ADEC may take enforcement action against a permittee for a bypass, unless:

      (1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

      (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

      (3) The permittee submitted notices as required under paragraph 2 of this section.

   b. The Director and ADEC may approve an anticipated bypass, after considering its adverse effects, if the Director and ADEC determine that it will meet the three conditions listed above in paragraph 3.a. of this section.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred and that the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting; and

   d. The permittee complied with any remedial measures required under Part III.D., Duty to Mitigate.

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

IV. GENERAL REQUIREMENTS

A. Changes in Discharge of Toxic Substances. Notification shall be provided to the Director and ADEC as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

    a. One hundred micrograms per liter (100 ug/l);

    b. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

    c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

    d. The level established by the Director in accordance with 40 CFR 122.44(f).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

    a. Five hundred micrograms per liter (500 ug/l);

    b. One milligram per liter (1 mg/l) for antimony;

    c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

    d. The level established by the Director in accordance with 40 CFR 122.44(f).

B. Planned Changes. The permittee shall give notice to the Director and ADEC as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29(b); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part IV.A.1.

C. Anticipated Noncompliance. The permittee shall also give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

D. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

E. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit.

F. Duty to Provide Information. The permittee shall furnish to the Director and ADEC, within a reasonable time, any information which the Director or ADEC may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director or ADEC, upon request, copies of records required to be kept by this permit.

G. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director or ADEC, it shall promptly submit such facts or information.

H. Signatory Requirements. All applications, reports or information submitted to the Director and ADEC shall be signed and certified.

1. All permit applications shall be signed as follows:

    a. For a corporation: by a responsible corporate officer.

    b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

    c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director or ADEC shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

    a. The authorization is made in writing by a person described above and submitted to the Director and ADEC, and

b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to authorization. If an authorization under paragraph IV.H.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph IV.H.2. must be submitted to the Director and ADEC prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. Availability of Reports. Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Director and ADEC. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

K. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

L. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

N. State Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Act.

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ATTACHMENT A

§ 125.104 Best management practices programs.

(a) BMP programs shall be developed in accordance with good engineering practices and with the provisions of this subpart.

(b) The BMP program shall:

(1) Be documented in narrative form, and shall include any necessary plot plans, drawings or maps;

(2) Establish specific objectives for the control of toxic and hazardous pollutants.

(i) Each facility component or system shall be examined for its potential for causing a release of significant amounts of toxic or hazardous pollutants to waters of the United States due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(ii) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the program should include a prediction of the direction, rate of flow and total quantity of toxic or hazardous pollutants which could be discharged from the facility as a result of each condition or circumstance;

(3) Establish specific best management practices to meet the objectives identified under paragraph (b)(2) of this section, addressing each component or system capable of causing a release of significant amounts of toxic or hazardous pollutants to the waters of the United States;

(4) *The BMP program:* (i) May reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP program by reference;

[*Comment:* EPA has proposed section 311(j)(1)(c) regulations (43 FR 39276) which require facilities subject to NPDES to develop and implement SPCC plans to prevent discharges of reportable quantities of designated hazardous substances. While Subpart K requires only procedural activities and minor construction, the proposed 40 CFR Part 151 (SPCC regulations) are more stringent and comprehensive with respect to their requirements for spill prevention. In developing BMP programs in accordance with Subpart K, owners or operators should also consider the requirements of proposed 40 CFR Part 151 which may address many of the same areas of the facility covered by this Subpart.]

(ii) Shall assure the proper management of solid and hazardous waste in accordance with regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) (40 U.S.C. 6901 *et seq*). Management practices required under RCRA regulations shall be expressly incorporated into the BMP program; and

(iii) Shall address the following points for the ancillary activities in § 125.102:

(A) Statement of policy;
(B) Spill Control Committee;
(C) Material inventory;
(D) Material compatibility;
(E) Employee training;
(F) Reporting and notification procedures;
(G) Visual inspections;
(H) Preventive maintenance;
(I) Housekeeping; and
(J) Security.

[*Comment:* Additional technical information on BMPs and the elements of a BMP program is contained in a publication entitled "NPDES Best Management Practices Guidance Document." Copies may be obtained by written request to Edward A. Kramer (EN-336), Office of Water Enforcement, Environmental Protection Agency, Washington, DC, 20460.]

Permit No.: AK-004331-1
Application No.: AK-004331-1

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

GRANITE POINT COAL PORT, INC.
(Diamond Shamrock Chuitna Coal Joint Venture)

is authorized to discharge from the port site facility located southwest of the village of Tyonek, Alaska, to receiving waters named Cook Inlet, in accordance with discharge points, effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective

This permit and the authorization to discharge shall expire at midnight,

Signed this day of

DRAFT

Director, Water Division, Region 10
U.S. Environmental Protection Agency

DEC 1989

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Attachment A: 40 CFR 125, Subpart K, §125.104(a) and (b)

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I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Specific Limitations and Monitoring Requirements.

1. During the effective term of this permit, the permittee is authorized to discharge from outfall 001 (sanitary waste) in accordance with the following effluent limitations and monitoring requirements:

Effluent Characteristics	Effluent Limitations		Monitoring Requirements	
	Avg. Monthly	Weekly Avg.	Frequency	Sample Type
Flow (gpd)	2000	---	monthly	instantaneous
Biochemical Oxygen Demand (BOD_5)	30 mg/l	45 mg/l	monthly	grab
Total Suspended Solids (TSS)	30 mg/l	45 mg/l	monthly	grab
pH	Not less than 6.0 standard units, nor greater than 9.0 standard units.		monthly	grab
Fecal Coliform	---	---	monthly	grab

The monthly average percent removal of BOD_5 and TSS shall not be less than 85%. Removal rates and associated calculations shall be submitted monthly with each Discharge Monitoring Report (DMR) form.

There shall be no discharge of floating solids, visible foam or oil and grease which causes a sheen on the surface of the receiving water.

2. During the effective term of this permit, the permittee is authorized to discharge from outfall 002 (sediment pond) in accordance with the following:

   a. Baseflow Conditions Discharges shall comply with the following limitations and monitoring requirements during baseflow conditions:

Effluent Characteristics	Effluent Limitations		Monitoring Requirements	
	Avg. Monthly	Daily Max.	Frequency	Sample Type
Total Hydrocarbons*	--	0.15 mg/l	weekly	grab
Total Iron	3.0 mg/l	6.0 mg/l	weekly	grab
Total Suspended Solids (TSS)	35.0 mg/l	70.0 mg/l	weekly	grab
Settleable Solids (SS)	--	--	weekly	grab
pH	Not less than 6.0 standard units, nor greater than 9.0 standard units		weekly	grab
Effluent Flow (mgd)	--	--	weekly	instantaneous
Receiving Stream Flow (cfs)	--	--	weekly	instantaneous

There shall be no discharge of floating solids, visible foam or oil and grease which causes a sheen on the surface of the receiving water.

*Total Hydrocarbons shall be measured using Standard Method 503(B).

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b. Precipitation Events (Alternate Limitations)

(1) Any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period less than or equal to 5.10 inches (or snowmelt of equivalent depth) shall comply with the following limitations and monitoring requirements:

Effluent Characteristics	Effluent Limitations Maximum Daily	Monitoring Requirements Frequency	 Sample Type
Effluent Flow (mgd)	N/A	weekly*	instantaneous
Receiving Stream Flow (cfs)	N/A	weekly*	instantaneous
SS	0.5 ml/l	daily	grab
pH	Not less than 6.0 standard units, nor greater than 9.0 standard units.	daily	grab

There shall be no discharge of floating solids, visible foam or oil and grease which causes a sheen on the surface of the receiving water.

[* Flows shall be measured at least once during the period when the alternate limitations apply.]

(2) Any discharge or increase in the volume of a discharge caused by precipitation within any 24-hour period greater than 5.10 inches (or snowmelt of equivalent depth) shall comply with the following limitations and monitoring requirements:

Effluent Characteristics	Effluent Limitations Maximum Daily	Monitoring Requirements Frequency	 Sample Type
Effluent Flow (mgd)	N/A	weekly*	instantaneous
Receiving Stream Flow (cfs)	N/A	weekly*	instantaneous
pH	Not less than 6.0 standard units, nor greater than 9.0 standard units.	daily	grab

There shall be no discharge of floating solids, visible foam or oil and grease which causes a sheen on the surface of the receiving water.

[* Flow shall be measured at least once during the period when the alternate limitations apply.]

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(3) The alternate precipitation limitations and monitoring requirements in Parts I.A.2.b.(1) or (2) begin when a discharge (or an increase in the volume of a discharge) is caused by precipitation (or snowmelt of equivalent depth), and shall continue two days following cessation of the precipitation event.

For the purpose of this part of the permit, the term "cessation of the precipitation event" is defined as when the discharge flow rate decreases to the flow rate preceeding the start of the precipitation event.

The permittee has the burden of proof to show that the discharge (or increase in discharge) resulted from a precipitation event.

B. Other Permit Requirements.

1. Watershed Monitoring Program

A monitoring program shall be established in order to define relationships between soil type, vegetation, and precipitation runoff, and the rate and quality of discharge from settling ponds for the four seasons of the year. The resulting watershed hydrographs should provide documentation for determining the "time of concentration" of the area contributing runoff to the sedimentation pond. The "time of concentration" is the time it takes for the last of the runoff from the hydraulically most remote point in the drainage area to reach the inlet of sedimentation pond. The program shall include provisions for monitoring influent to the sedimentation pond and precipitation.

The permittee shall submit details of this program to EPA and the Alaska Department of Environmental Conservation (ADEC) for review and approval within 90 days of the effective date of this permit.

2. Precipitation Monitoring Program

The permittee shall keep a record of all precipitation events. This record shall include as a minimum dates, time, and precipitation amounts for each precipitation event. A copy of this record shall be submitted with the monthly discharge monitoring reports (DMR) see Part II.C.

3. Use of Chemicals, Detergents, Solvents or Degreasers

Within six months of the effective date of this permit, the permittee shall submit to EPA and ADEC for review and approval a list of chemicals, detergents, solvents or degreasers that are used to wash down equipment or are used in the maintenance shops which may enter the sedimentation ponds through runoff.

4. Best Management Practices (BMP) Plan

Within one year of the effective date of this permit or three months before construction begins (whichever date occurs first), the permittee shall submit a BMP plan to EPA for review and approval. This plan shall be developed in accordance with 40 CFR 125.104 (see Attachment A), and shall also consider the BMP for water management presented in the EPA "Development Document for Effluent Limitations and Standards for the Coal Mining Point Source Category" (EPA 440/1-82/057, October 1982, pages 362, 367-376).

The BMP plan, upon approval shall become part of this permit. A copy of the BMP plan shall be kept at the facility.

The permittee shall amend the BMP plan whenever there is a change in facility design, construction, operation, or maintenance which materially affects the facility's potential for discharge of significant amounts of hazardous or toxic pollutants to waters of the United States.

If the BMP program proves to be ineffective in achieving the general objective of preventing the release of significant amounts of toxic or hazardous pollutants to waters of the United States and the specific objectives and requirements of the BMP plan, the permit and/or the BMP program shall be subject to modification to incorporate revised BMP requirements.

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C. Definitions.

1. "Average monthly discharge limitation" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

2. "Baseflow Conditions" refers to the sustained flow of water in rivers and streams resulting primarily from groundwater seepage into the water courses.

3. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

4. "Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

5. A "Grab" sample is a single sample or measurement taken at a specific time or over as short a period of time as is feasible.

6. "Maximum daily discharge limitation" means the highest allowable "daily discharge."

7. "Precipitation Event" includes any period of time for which there has been measurable precipitation, and periods of snowmelt (occurring at any time there is snow on the ground within the watershed and the temperature is above 0°C).

8. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

9. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under Part I shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.

B. Monitoring Procedures.

1. Settleable Solids. Fill an Imhoff cone to the one-liter mark with a thoroughly mixed sample. Allow to settle undisturbed for 45 minutes. Gently stir along the inside surface of the cone with a stirring rod. Allow to settle undisturbed for 15 minutes longer. Record the volume of settled material in the cone as milliliters per liter. Where a separation of settleable and floating material occurs, do not include the floating material in the reading.

2. Other Parameters. Monitoring for other parameters must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

C. Reporting of Monitoring Results. Monitoring results shall be summarized each month on the Discharge Monitoring Report (DMR) form (EPA No. 3320-1). The reports shall be submitted monthly and are to be postmarked by the 10th day of the following month. Legible copies of these, and all other reports, shall be signed and certified in accordance with the requirements of Part IV.H., Signatory Requirements, and submitted to the Director, Water Division and the State agency at the following addresses:

original to: United States Environmental Protection Agency (EPA)
Region 10
1200 Sixth Avenue, WD-135
Seattle, Washington 98101

copy to: Alaska Department of Environmental Conservation (ADEC)
Southcentral Region
3601 "C" Street, Suite 1350
Anchorage, Alaska 99503

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D. Additional Monitoring by the Permittee. If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated.

E. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

F. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director or ADEC at any time. Data collected on-site, copies of Discharge Monitoring Reports, and a copy of this NPDES permit must be maintained on-site during the duration of activity at the permitted location.

G. Twenty-four Hour Notice of Noncompliance Reporting.

1. The following occurrences of noncompliance shall be reported by telephone within 24 hours from the time the permittee becomes aware of the circumstances:
    a. Any noncompliance which may endanger health or the environment;
    b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G., Bypass of Treatment Facilities.);
    c. Any upset which exceeds any effluent limitation in the permit (See Part III.H., Upset Conditions.); or
    d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit to be reported within 24 hours.

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2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected; and

   d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Compliance Section in Seattle, Washington, by phone, (206) 442-1213.

4. Reports shall be submitted to the addresses in Part II.C., Reporting of Monitoring Results.

H. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.C. are submitted. The reports shall contain the information listed in Part II.G.2.

I. Inspection and Entry. The permittee shall allow the Director, ADEC, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions.

1. Civil Penalty. The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be subject to a civil penalty, not to exceed $25,000 per day for each violation.

2. Criminal Penalties:

a. Negligent Violations. The Act provides that any person who negligently violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or by both.

b. Knowing Violations. The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or by both.

c. Knowing Endangerment. The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. A person which is an organization shall, upon conviction of violating this subparagraph, be subject to a fine of not more than $1,000,000.

d. False Statements. The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this Act or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under this Act, shall upon conviction, be punished by a fine of not more that $10,000, or by imprisonment for not more than 2 years, or by both.

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Except as provided in permit conditions in Part III.G., Bypass of Treatment Facilities and Part III.H., Upset Conditions, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

G. Bypass of Treatment Facilities:

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2 and 3 of this section.

2. Notice:

    a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.

    b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting.

3. Prohibition of bypass.

    a. Bypass is prohibited and the Director or ADEC may take enforcement action against a permittee for a bypass, unless:

        (1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

        (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

        (3) The permittee submitted notices as required under paragraph 2 of this section.

    b. The Director and ADEC may approve an anticipated bypass, after considering its adverse effects, if the Director and ADEC determine that it will meet the three conditions listed above in paragraph 3.a. of this section.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred and that the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting; and

   d. The permittee complied with any remedial measures required under Part III.D., Duty to Mitigate.

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

IV. GENERAL REQUIREMENTS

A. Changes in Discharge of Toxic Substances. Notification shall be provided to the Director and ADEC as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. One hundred micrograms per liter (100 ug/l);

   b. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

   c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d. The level established by the Director in accordance with 40 CFR 122.44(f).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. Five hundred micrograms per liter (500 ug/l);

   b. One milligram per liter (1 mg/l) for antimony;

   c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d. The level established by the Director in accordance with 40 CFR 122.44(f).

B. Planned Changes. The permittee shall give notice to the Director and ADEC as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29(b); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part IV.A.1.

C. Anticipated Noncompliance. The permittee shall also give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

D. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

E. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit.

F. Duty to Provide Information. The permittee shall furnish to the Director and ADEC, within a reasonable time, any information which the Director or ADEC may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director or ADEC, upon request, copies of records required to be kept by this permit.

G. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director or ADEC, it shall promptly submit such facts or information.

H. Signatory Requirements. All applications, reports or information submitted to the Director and ADEC shall be signed and certified.

1. All permit applications shall be signed as follows:

   a. For a corporation: by a responsible corporate officer.

   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

   c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director or ADEC shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director and ADEC, and

b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to authorization. If an authorization under paragraph IV.H.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph IV.H.2. must be submitted to the Director and ADEC prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. Availability of Reports. Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Director and ADEC. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

K. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

L. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

N. State Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Act.

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ATTACHMENT A

§ 125.104 Best management practices programs.

(a) BMP programs shall be developed in accordance with good engineering practices and with the provisions of this subpart.

(b) The BMP program shall:

(1) Be documented in narrative form, and shall include any necessary plot plans, drawings or maps;

(2) Establish specific objectives for the control of toxic and hazardous pollutants.

(i) Each facility component or system shall be examined for its potential for causing a release of significant amounts of toxic or hazardous pollutants to waters of the United States due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(ii) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the program should include a prediction of the direction, rate of flow and total quantity of toxic or hazardous pollutants which could be discharged from the facility as a result of each condition or circumstance;

(3) Establish specific best management practices to meet the objectives identified under paragraph (b)(2) of this section, addressing each component or system capable of causing a release of significant amounts of toxic or hazardous pollutants to the waters of the United States;

(4) *The BMP program:* (i) May reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP program by reference;

[*Comment:* EPA has proposed section 311(j)(1)(c) regulations (43 FR 39276) which require facilities subject to NPDES to develop and implement SPCC plans to prevent discharges of reportable quantities of designated hazardous substances. While Subpart K requires only procedural activities and minor construction, the proposed 40 CFR Part 151 (SPCC regulations) are more stringent and comprehensive with respect to their requirements for spill prevention. In developing BMP programs in accordance with Subpart K, owners or operators should also consider the requirements of proposed 40 CFR Part 151 which may address many of the same areas of the facility covered by this Subpart.]

(ii) Shall assure the proper management of solid and hazardous waste in accordance with regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) (40 U.S.C. 6901 *et seq*). Management practices required under RCRA regulations shall be expressly incorporated into the BMP program; and

(iii) Shall address the following points for the ancillary activities in § 125.102:

(A) Statement of policy;
(B) Spill Control Committee;
(C) Material inventory;
(D) Material compatibility;
(E) Employee training;
(F) Reporting and notification procedures;
(G) Visual inspections;
(H) Preventive maintenance;
(I) Housekeeping; and
(J) Security.

[*Comment:* Additional technical information on BMPs and the elements of a BMP program is contained in a publication entitled "NPDES Best Management Practices Guidance Document." Copies may be obtained by written request to Edward A. Kramer (EN-336), Office of Water Enforcement, Environmental Protection Agency, Washington, DC, 20460.]

Permit No.: AK-004356-7
Application No.: AK-004356-7

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et seq., as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

TIDEWATER SERVICES COMPANY
(Housing Facilities)
Diamond Shamrock Chuitna Coal Joint Venture

is authorized to discharge from a facility located near the village of Tyonek, Alaska, to receiving waters named the tributaries of the Chuitna River and the Chuitna River, in accordance with discharge points, effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective

This permit and the authorization to discharge shall expire at midnight,

Signed this day of

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Director, Water Division, Region 10
U.S. Environmental Protection Agency

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Attachment A: 40 CFR 125, Subpart K, §125.104(a) and (b)

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I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Specific Limitations and Monitoring Requirements for Outfall 001.

During the effective term of this permit, the permittee is authorized to discharge from outfall 001 (sanitary waste) in accordance with the following effluent limitations and monitoring requirements:

Effluent Characteristics	Effluent Limitations Avg. Monthly	Effluent Limitations Weekly Avg.	Monitoring Requirements Frequency	Monitoring Requirements Sample Type
Biochemical Oxygen Demand (BOD_5)	30 mg/l	45 mg/l	monthly	grab
Total Suspended Solids (TSS)	30 mg/l	45 mg/l	monthly	grab
pH	Not less than 6.0 standard units, nor greater than 9.0 standard units.		monthly	grab
Flow, gpd	50,000	--	monthly	instantaneous
Fecal Coliform, #/100ml	--	--	monthly	grab

The average monthly percent removal of BOD_5 and TSS shall not be less than 85%. Removal rates and associated calculations shall be submitted monthly with each Discharge Monitoring Report (DMR) form.

There shall be no discharge of floating solids or visible foam or oil and grease which causes a sheen on the surface of the receiving water.

B. Specific Limitations and Monitoring Requirements for Outfalls 002 and 003.

During the effective term of this permit, the permittee is authorized to discharge from outfalls 002 and 003 (sediment ponds) in accordance with the following effluent limitations and monitoring requirements:

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITATION Avg. Monthly	EFFLUENT LIMITATION Max. Daily	MONITORING REQUIREMENTS Frequency	MONITORING REQUIREMENTS Sample Type
TSS	20.0 mg/l	30.0 mg/l	weekly	grab
Settleable Solids (SS)	--	0.2 ml/l	weekly	grab
pH	Not less than 6.0 standard units, nor greater than 9.0 standard units.		weekly	grab
Flow, mgd	--	--	weekly	instantaneous

There shall be no discharge of floating solids or visible foam or oil and grease which causes a sheen on the surface of the receiving water.

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C. Best Management Practices (BMP) Plan

Within one year of the effective date of this permit or three months before construction begins (whichever date occurs first), the permittee shall submit a BMP plan to EPA for review and approval. This plan shall be developed in accordance with 40 CFR 125.104 (see Attachment A), and shall also consider the BMP for water management presented in the EPA "Development Document for Effluent Limitations and Standards for the Coal Mining Point Source Category" (EPA 440/1-82/057, October 1982, pages 362, 367-376).

The BMP plan, upon approval shall become part of this permit. A copy of the BMP plan shall be kept at the facility.

The permittee shall amend the BMP plan whenever there is a change in facility design, construction, operation, or maintenance which materially affects the facility's potential for discharge of significant amounts of hazardous or toxic pollutants to waters of the United States.

If the BMP program proves to be ineffective in achieving the general objective of preventing the release of significant amounts of toxic or hazardous pollutants to waters of the United States and the specific objectives and requiremants of the BMP plan, the permit and/or the BMP program shall be subject to modification to incorporate revised BMP requirements.

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D. Definitions.

1. "Average monthly discharge limitation" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

2. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

3. "Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

4. A "Grab" sample is a single sample or measurement taken at a specific time or over as short a period of time as is feasible.

5. "Maximum daily discharge limitation" means the highest allowable "daily discharge."

6. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

7. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under Part I shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.

B. Monitoring Procedures.

1. Settleable Solids. Fill an Imhoff cone to the one-liter mark with a thoroughly mixed sample. Allow to settle undisturbed for 45 minutes. Gently stir along the inside surface of the cone with a stirring rod. Allow to settle undisturbed for 15 minutes longer. Record the volume of settled material in the cone as milliliters per liter. Where a separation of settleable and floating material occurs, do not include the floating material in the reading.

2. Other Parameters. Monitoring for other parameters must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

C. Reporting of Monitoring Results. Monitoring results shall be summarized each month on the Discharge Monitoring Report (DMR) form (EPA No. 3320-1). The reports shall be submitted monthly and are to be postmarked by the 10th day of the following month. Legible copies of these, and all other reports, shall be signed and certified in accordance with the requirements of Part IV.H., Signatory Requirements, and submitted to the Director, Water Division and the State agency at the following addresses:

original to: United States Environmental Protection Agency (EPA)
Region 10
1200 Sixth Avenue, WD-135
Seattle, Washington 98101

copy to: Alaska Department of Environmental Conservation (ADEC)
Southcentral Region
3601 "C" Street, Suite 1350
Anchorage, Alaska 99503

D. Additional Monitoring by the Permittee. If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated.

E. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

F. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director or ADEC at any time. Data collected on-site, copies of Discharge Monitoring Reports, and a copy of this NPDES permit must be maintained on-site during the duration of activity at the permitted location.

G. Twenty-four Hour Notice of Noncompliance Reporting.

1. The following occurrences of noncompliance shall be reported by telephone within 24 hours from the time the permittee becomes aware of the circumstances:

    a. Any noncompliance which may endanger health or the environment;

    b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G., Bypass of Treatment Facilities.);

    c. Any upset which exceeds any effluent limitation in the permit (See Part III.H., Upset Conditions.); or

    d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit to be reported within 24 hours.

2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected; and

   d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Compliance Section in Seattle, Washington, by phone, (206) 442-1213.

4. Reports shall be submitted to the addresses in Part II.C., Reporting of Monitoring Results.

H. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.C. are submitted. The reports shall contain the information listed in Part II.G.2.

I. Inspection and Entry. The permittee shall allow the Director, ADEC, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions.

1. Civil Penalty. The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be subject to a civil penalty, not to exceed $25,000 per day for each violation.

2. Criminal Penalties:

a. Negligent Violations. The Act provides that any person who negligently violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or by both.

b. Knowing Violations. The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or by both.

c. Knowing Endangerment. The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. A person which is an organization shall, upon conviction of violating this subparagraph, be subject to a fine of not more than $1,000,000.

d. False Statements. The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this Act or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under this Act, shall upon conviction, be punished by a fine of not more that $10,000, or by imprisonment for not more than 2 years, or by both.

Except as provided in permit conditions in Part III.G., Bypass of Treatment Facilities and Part III.H., Upset Conditions, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

G. Bypass of Treatment Facilities:

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2 and 3 of this section.

2. Notice:

   a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.

   b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting.

3. Prohibition of bypass.

   a. Bypass is prohibited and the Director or ADEC may take enforcement action against a permittee for a bypass, unless:

      (1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

      (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

      (3) The permittee submitted notices as required under paragraph 2 of this section.

   b. The Director and ADEC may approve an anticipated bypass, after considering its adverse effects, if the Director and ADEC determine that it will meet the three conditions listed above in paragraph 3.a. of this section.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred and that the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting; and

   d. The permittee complied with any remedial measures required under Part III.D., Duty to Mitigate.

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

IV. GENERAL REQUIREMENTS

A. Changes in Discharge of Toxic Substances. Notification shall be provided to the Director and ADEC as soon as the permittee knows of, or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. One hundred micrograms per liter (100 ug/l);

   b. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

   c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d. The level established by the Director in accordance with 40 CFR 122.44(f).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   a. Five hundred micrograms per liter (500 ug/l);

   b. One milligram per liter (1 mg/l) for antimony;

   c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d. The level established by the Director in accordance with 40 CFR 122.44(f).

B. Planned Changes. The permittee shall give notice to the Director and ADEC as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29(b); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part IV.A.1.

C. Anticipated Noncompliance. The permittee shall also give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

D. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

E. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit.

F. Duty to Provide Information. The permittee shall furnish to the Director and ADEC, within a reasonable time, any information which the Director or ADEC may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director or ADEC, upon request, copies of records required to be kept by this permit.

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    a. For a corporation: by a responsible corporate officer.

    b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

    c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director or ADEC shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

    a. The authorization is made in writing by a person described above and submitted to the Director and ADEC, and

b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to authorization. If an authorization under paragraph IV.H.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph IV.H.2. must be submitted to the Director and ADEC prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. Availability of Reports. Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Director and ADEC. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

K. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

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L. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

N. State Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Act.

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Appendix E

Air Quality Emissions Calculations

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AIR QUALITY EMISSIONS
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ATTACHMENT A - State of Alaska Department of Environmental Conservation

ATTACHMENT B - (Excerpt from: California Air Resources Board, 1983.
Draft Report to the California Legislature on Air
Pollutant Emissions from Marine Vessels).

APPENDIX E
AIR QUALITY EMISSIONS

1.0 INTRODUCTION

This appendix contains calculations of significant air emissions associated with the project. It includes construction and temporary (overland truck haul) emissions, and short-term and annual average production-phase emissions.

Production phase emissions, where feasible, are assigned to one of the four functional areas of the project; the mine area, the service area, the port facility, or the housing facility. Emissions which occur between the four functional areas, such as overland conveyor emissions and miscellaneous vehicle emissions, are listed separately.

Production-phase emissions are calculated for both production year 3 and full production emissions. Full production corresponds to the fourth year of production. Emissions estimates for both years were fairly close because though year 3 would have half the coal production of year 4, a significantly higher amount of overburden would be moved in year 3. Therefore, emissions for both years were estimated and modeled. Where production emissions show only one annual rate, emissions would be approximately the same at both production levels.

Emission factors, except where noted, are calculated from State of Alaska Department of Environmental Conservation emission factor equations for surface mines (Attachment A). Original sources for the Attachment A equations are also indicated below where appropriate.

2.0 CONSTRUCTION-RELATED AND TEMPORARY EMISSIONS

Construction-related emissions include the land clearing and slash burning emissions which would occur during the first three years of the project, prior to coal production. Temporary emissions include the emissions from the overland coal haul by truck to the port site. This will occur only during the first two years of coal production, while the conveyor is being constructed. These overland truck haul emissions are of concern because the emissions will be significantly higher than the emissions from the conveyor.

2.1 Construction Land Clearing Fugitive Dust Emissions

Emission Factor = $5.7\ s^{1.2}/M^{1.3}$ lb/hr (1)
Source: U.S. EPA 1985, Section 8.24

where s = silt content of overburden = 31%
M = moisture content of overburden = 45%

$$EF = 5.7(31)^{1.2}/(45)^{1.3}$$
$$= 2.49\ \text{lb/hr}$$

Emissions:
Annual
$$PM = (2.49\ \text{lb/hr})(44{,}548\ \text{hr/yr})^{a}$$
$$= 55.5\ \text{ton/yr}$$

2.2 Construction Land Clearing Dozer Tailpipe Emissions

Emission Factors

NO_x: 4.166 lb/hr
SO_2: 0.348 lb/hr
CO: 1.794 lb/hr
VOC: 0.192 lb/hr
PM: 0.165 lb/hr

Source: U.S. EPA 1985, Table II-7.1

Emissions:

Annual
$$NO_x = (4.166\ \text{lb/hr})(44{,}548\ \text{hr/yr})^{a}$$
$$= 92.8\ \text{ton/yr}$$

Emissions of the other pollutants are calculated in the same manner.

2.3 Construction Slash Burning Emissions

Emission Factors:

NO_x: 64 lb/acre
SO_2: 0 lb/acre
CO: 2235 lb/acre
HC: 384 lb/acre
PM: 272 lb/acre

ADEC Emission Factor. Source: U.S. EPA 1985, Section 11.1.

Emissions:
Annual
$$PM = (272\ \text{lb/acre})(150\ \text{acres/year})(\text{ton}/2000\ \text{lb})$$
$$= 20.4\ \text{ton/yr}$$

Emissions of the other pollutants are calculated likewise using the emission factors given above.

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[a] Letter from TRC to Dan Harlow (Diamond Alaska Coal Co.), March 17, 1988

2.4 Temporary Overland Truck Coal Haul Fugitive Dust Emissions

ADEC Emission Factor. Source: U.S. EPA 1985, Section 8.24.

$$\text{Emission Factor} = 0.0067w^{3.4}L^{0.2} \qquad (2)$$

where w = number of wheels = 6
L = road surface silt loading = 40.8 g/m^2

$$EF = (0.0067)(6)^{3.4}(40.8)^{0.2}$$
$$= 6.22 \text{ lb/VMT}$$

Control: Emissions would be 85% controlled through a program of chemical dust supressant application and watering.

Emissions:
Annual
PM = (6.22 lb/VMT)(99 trips/day)(22 mi/trip)
(338 day/yr)(1-0.85 control)(ton/2000 lb)
= 343 ton/yr

2.5 Temporary Truck Coal Haul Exhaust Emissions

Assume 1000 hp engines and a vehicle speed of 30 mph.

Emission Factors:

NO_x: 8.15 g/hphr
SO_2: 0.887 g/hphr
CO: 2.28 g/hphr
HC: 0.37 g/hphr
PM: 0.502 g/hphr

Source: U.S. EPA 1985, Table II-7.1

Emissions:
Annual
NO_x = (8.15 g/hphr)(1000 hp)(hr/30 mi)(99 trips/day)(22 mi/trip)(338 day/yr)(lb/454 g)
(ton/2000 lb)
= 220.3 ton/yr

Emissions of the other pollutants are calculated in the same manner using the emission factors given above. All HC emissions are assumed to be VOCS.

3.0 MINE AREA EMISSIONS

Emissions in the mine area would include those associated with land clearing and slash burning, overburden removal, coal removal, overburden replacement, and reclamation activities.

3.1 Land Clearing/Reclamation

This includes reclamation and land clearing emissions from bulldozer work. Emissions are the same as those calculated for construction (Section 2.1).

Emissions:
Annual

$$2.49 \text{ lb/hr} \times \frac{44{,}548 \text{ hr}}{\text{yr}} \times \frac{\text{ton}}{2{,}000\text{lb}} = 55.5 \text{ ton/yr}$$

PM = 55.5 ton/yr

Hourly

$$PM = \frac{55.5 \text{ ton}}{\text{yr}} \times \frac{2{,}000 \text{ lb}}{\text{ton}} \times \frac{\text{yr}}{338 \text{ days}} \times \frac{1 \text{ day}}{24\text{hr}} = 13.7 \text{ lb/hr}$$

3.2 Slash Burning Emissions

Emissions are the same as those calculated for construction (Section 2.3). Slash burning would not occur simultaneously with most of the other activities and acreage involved in a single burn session is unknown. Therefore, hourly slash burn emissions are not quantified.

Annual PM = 20.4 ton/yr

3.3 Overburden Removal - Truck Shovel

$$\text{Emission Factor} = \frac{0.0018k(s/5)(u/5)(d/5)}{(M/2)^2(Y/6)^{0.33}} \text{ lb/ton} \qquad (3)$$

ADEC Emission Factor. Source: U.S. EPA 1985, Section 11.2.3.3.

where k = particle size factor = 0.73
s = silt content of overburden = 31%
u = annual average wind speed = 5.6 mph
d = drop distance into trucks = 5 feet
M = moisture content of overburden = 45%
Y = batch size of shovels = 22.3 yd^3

$$EF = \frac{(0.0018)(0.73)(31/5)(5.6/5)(5/5)}{(45/2)^2\ (22.3/6)^{0.33}}$$

$$= 1.17 \times 10^{-5} \text{ lb/ton}$$

Emissions:

Annual, production year 3

PM = (1.17 x 10^{-5} lb/ton)(17.481 x 10^{6} ton/yr)
(ton/2000 lb)
= 0.1 ton/yr

Annual, full production

PM = (1.17 x 10^{-5} lb/ton)(17.186 x 10^{6} ton/yr)
(ton/2000 lb)
= 0.1 ton/yr

Hourly

PM = (2.49 lb/hr)(11 dozers)(13.3 hr/day)
(day/24 hr)(2000 lb/ton)
= 0.02 lb/hr

Note that overburden movement and coal movement constitute the entire material movement scenario at the mine. There are no additional catagories of material (such as topsoil) to be handled.

3.4 Overburden Removal - Dragline

Emission factor = (0.04)(0.75)(365-n)/365 (4)

ADEC Emission Factor. Source: U.S. EPA 1978.

where n = number of wet days per year = 100

EF = 0.02178 lb/yd^3

Emissions:

Annual, production year 3

PM = (0.02178 lb/yd^3)(15.151 x 10^{6} yd^3/yr)
(ton/2000 lb)
= 165.0 ton/yr

Hourly, production year 3

PM = (165.0 ton/yr)(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 37.7 lb/hr

Annual, full production

PM = (0.02178 lb/yd^3)(20.327 x 10^{6} yd^3/yr)
(ton/2000 lb)
= 221.4 ton/yr

Hourly, full production

PM = (221.4 ton/yr)(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 50.6 lb/hr

3.5 Overburden Hauling

Emission Factor = 6.22 lb/VMT (see Section 2.4)

Control: 85% control with application of chemicals.

Emissions:
Annual, production year 3
PM = (6.22 lb/VMT)(483,645 VMT/yr)(1-0.85
control)(ton/2000 lb)
= 225.6 ton/yr

Annual, full production
PM = (6.22 lb/VMT)(134,837 VMT/yr)(1-0.85
control)(ton/2000 lb)
= 62.9 ton/yr

Hourly, production year 3
PM = (225.6 ton/yr)(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 51.5 lb/hr

Hourly, full production
PM = (62.9 ton/yr)(hr/365 day)(day/24 hr)
(2000 lb/ton)
= 14.4 lb/hr

3.6 Overburden Dumping

Emission Factor - See Section 3.3.

where k = 0.73, s = 31%, u = 5.6 mph, M = 45%
d = drop distance to ground = 6 feet
Y = batch size of trucks = 96.9 yd^3

$$EF = \frac{(0.0018)(0.73)(31/5)(5.6/5)(6/5)}{(45/2)^2\ (96.9/6)^{0.33}}$$

$$= 8.64 \times 10^{-6} \text{ lb/ton}$$

Emissions:
Annual, production year 3
PM = $(8.64 \times 10^{-6}$ lb/ton$)(30.679 \times 10^{6}$ ton/yr)
(ton/2000 lb)
= 0.1 ton/yr

Annual, full production
PM = $(8.64 \times 10^{-5}$ lb/ton$)(30.161 \times 10^{6}$ ton/yr)
(ton/2000 lb)
= 0.1 ton/yr

Hourly
PM = (0.1 ton/yr)(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 2.3×10^{-2} lb/hr

3.7 Coal Removal

Emission Factor = 0.003 x 0.70 lb/ton
= 2.1 x 10^{-3} lb/ton

ADEC Emission Factor. Source: U.S. EPA 1978. Note that this emission factor is also used by the State of Wyoming Division of Air Quality.

Emissions:
Annual, production year 3
PM = (2.1 x 10^{-3} lb/ton)(6 x 10^{6} ton/yr)
(ton/2000 lb)
= 6.3 ton/yr

Annual, full production
PM = (2.1 x 10^{-3} lb/ton)(12 x 10^{6} ton/yr)
(ton/2000 lb)
= 12.6 ton/yr

Hourly, production year 3
PM = (6.3 ton/yr)(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 1.4 lb/hr

Hourly, fully production
PM = (12.6 ton/yr)(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 2.9 lb/hr

3.8 Coal Hauling

Emission Factor = 6.22 lb/VMT (see Section 2.4)

Control: 85% with application of chemicals.
Emissions:
Annual, production year 3
PM = (6.22 lb/VMT)(93,529 VMT/yr)(1-0.85
control)(ton/2000 lb)
= 43.6 ton/yr

Annual, full production
PM = (6.22 lb/VMT)(187,059 VMT/yr)(1-0.85
control)(ton/2000 lb)
= 87.3 ton/yr

Hourly, production year 3
PM = (43.6 ton/yr)(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 10.0 lb/hr

Hourly, full production
PM = (87.3 ton/yr(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 19.9 lb/hr

3.9 Coal Dumping

Emission Factor = (See Section 3.3)

where k = 0.73, u = 5.6 mph
s = silt content of coal = 6.2%
d = drop distance into hopper = 6 feet
M = moisture content of coal = 28%
Y = batch size of trucks = 96.9 yd^3

$$EF = \frac{(0.0018)(0.73)(6.2/5)(5.6/5)(6/5)}{(28/2)^2\ (96.9/6)^{0.33}}$$

$$= 4.46 \times 10^{-6} \text{ lb/ton}$$

Emissions:

Annual, production year 3
PM = $(4.46 \times 10^{-6}$ lb/ton$)(6 \times 10^6$ ton/yr$)$
(ton/2000 lb)
= 0.01 ton/yr

Annual, full production
PM = $(4.46 \times 10^{-6}$ lb/ton$)(12 \times 10^6$ ton/yr$)$
(ton/2000 lb)
= 0.03 ton/yr

Hourly, production year 3
PM = (0.01 ton/yr)(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 2.3×10^{-3} lb/hr

Hourly, full production
PM = (0.03 ton/yr)(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 6.8×10^{-3} lb/hr

3.10 Coal Primary Crushing

Emission Factor = 0.02 lb/ton

ADEC Emission Factor. Source: U.S. EPA 1985, Section 8.23

Control: 99% with baghouse.

Emissions:

Annual, production year 3
PM = $(0.02$ lb/ton$)(6 \times 10^6$ ton/yr$)(1-0.99$
control)(ton/2000 lb)
= 0.6 ton/yr

Annual, full production
PM = $(0.02$ lb/ton$)(12 \times 10^6$ ton/yr$)(1-0.99$
control)(ton/2000 lb)
= 1.2 ton/yr

(2000 lb/ton)
= 0.1 lb/hr

Hourly, full production
PM = (1.2 ton/yr)(yr/365day)(day/24 hr)(2000 lb/ton)
= 0.3 lb/hr

3.11 Wind Erosion - Mine Area

Emission Factor = aICKL'V' ton/acre-yr

ADEC Emission Factor. Source: U.S. EPA 1978.

where a = suspended fraction = 0.025
I = soil erodibility = 47 ton/acre-yr
C = Climatic factor = 0.1
K = Roughness factor = 0.7
L'= Unsheltered field width factor = 0.7
V'= Vegetation Factor = 1.0

Emission Factor = (0.025)(47)(0.1)(0.7)(0.7(1.)
= 0.576 ton/acre-yr

Disturbed area = mined area-reclaimed area
= 746 acres - 85 acres
= 661 acres (year 6)

Emissions:
Annual, production year 3
PM = (0.0576 ton/acre-yr)(661 acres)
= 38.0 ton/yr

Annual, full production
PM = (0.0576 ton/acre-yr)(1054 acres - 430 acres)
= 35.9 ton/yr

Hourly, production year 3
PM = (3.8 ton/yr)(yr/365 day)(day/24 hr) (2000 lb/ton)
= 8.7 lb/hr

Hourly, full production
PM = (35.9 ton/yr)(yr/365 day)(day/24 hr) (2000 lb/ton)
= 8.2 lb/hr

3.12 Haul Road Maintenance/Graders

Emission factor = $0.04s^{2.5}$ lb/VMT

Source: U.S. EPA 1985, Section 8.24

where s = grader speed = 4 mph

$$EF = (0.04)(4)^{2.5}$$
$$= 1.28 \text{ lb/VMT}$$

Control: 50 percent with watering

Emissions:
Annual
PM = (1.28 lb/VMT)(2 graders)(18 hr/day) (4 mi/hr) x (338 day/yr)(ton/2000 lb)(1-0.50)
= 15.6 ton/yr

Hourly
PM = (1.28 lb/VMT)(2 graders)(4 mi/hr) (1-0.50)
= 5.1 lb/hr

3.13 Dozer Tailpipe Emissions

Emissions are the same as those calculated for construction (Section 2.2).

Hourly
NO_x = (4.166 lb/hr)(44,548 hr/yr)(yr/338 days) (day/24 hr)
= 22.9 lb/hr

Emissions of the other pollutants are calculated in the same manner.

3.14 Grader Tailpipe Emissions

Emission Factors:

NO_x:	0.713 lb/hr
SO_2:	0.086 lb/hr
CO:	0.151 lb/hr
VOC:	0.040 lb/hr
PM:	0.061 lb/hr

Source: U.S. EPA 1985, Table II-7.1

Emissions:
Annual
NO_x = (0.713 lb/hr)(2 graders)(18 hr/day) (338 day/yr)(ton/2000 lb)
= 4.3 ton/yr

Annual emissions of the other pollutants are calculated in the same manner.

Grader Tailpipe	NO_x	SO_2	CO	VOC	PM
Annual Emissions (tons/yr)	4.3	0.5	0.9	0.2	0.4

Hourly
NO_x = (0.713 lb/hr)(2 graders)
= 1.4 lb/hr

3.15 Haul Truck Tailpipe Emissions

Emission factors: See Section 2.5.

Emissions:
Annual, production year 3
NO_x = (8.15 g/hphr)(1000 hp)(hr/30 mi)(93,529 VMT/yr)(lb/454 g)(ton/2000 lb)
= 28.0 ton/yr

Annual, full production
NO_x = (8.15 g/hphr)(1000 hp)(hr/30 mi)(187,059 VMT/yr)91b/454 g)(ton/2000 lb)
= 56.0 ton/yr

Hourly, production year 3
NO_x = (28.0 ton/yr)(yr/365 day)(day/24 hr)(2000 lb/ton)
= 6.4 lb/hr

Hourly, full production
NO_x = (56.0 ton/yr)(yr/365 day)(day/24 hr)(2000 lb/ton)
= 12.8 lb/hr

Emission of the other pollutants are calculated in the same manner with the emission factors listed above. All HC emissions are assumed to be VOCs.

Haul Trucks: (Overburden)

Emissions:
Annual, production year 3
NO_x = (8.15 g/hphr) (1000 hp) (hr/30 mi) (483,645 VMT/yr) (lb/454 g) (ton/2000 lb)
= 144.8 ton/yr

Annual, full production
NO_x = (8.15 g/hphr)(1000 hp)(hr/30 mi) (134,837 VMT/yr)(lb/454 g)(ton/2000 lb)
= 40.3 ton/yr

Hourly, production year 3
NO_x = (144.8 ton/yr)(yr/365 day)(day/24 hr) (2000 lb/ton)
= 33.1 lb/hr

Hourly, full production

NO_x = (40.3 ton/yr)(yr/365 day)(day/24 hr)
(2000 lb/ton)
= 9.2 lb/hr

Note: Vehicle miles travelled for coal and overburden are found in Table 4 of "Response to Comments by ADEC Regarding the Diamond Chuitna Project Air Quality Impact Analysis", April 20, 1987.

3.16 Other Mine Area Sources

Other potential sources of emissions in the mine area are the permanent landfill and secondary blasting. Blasting will not be required for removal of the coal or the overburden. Blasting would only be required occasionally when large boulders are encountered. Activities at the permanent landfill would also be intermittent. Because the emissions from these sources would occur intermittently and because they are not expected to be substantial, they are not quantified.

4.0 MINE SERVICE AREA EMISSIONS

Emissions in the mine service area include those associated with coal handling, processing, and storage.

4.1 Secondary Coal Crushing

Emission Factor = 0.06 lb/ton

Source: PEDCo 1976. This emission factor is somewhat higher than the ADEC emission factor of 0.05 lb/ton for secondary crushing, as given in AP-42 Section 8.23. However, the 0.06 lb/ton reflects the emissions as modeled.

Control: 99% with baghouse.

Emissions:

Annual, production year 3

PM = (0.06 lb/ton)(6×10^6 ton/yr)(1-0.99
control)(ton/2000 lb)
= 1.8 ton/yr

Annual, full production

PM = (0.06 lb/ton)(12×10^6 ton/yr)(1-0.99
control)(day/24 hr)(ton/2000 lb)
= 3.6 ton/yr

Hourly, production year 3

PM = (1.8 ton/yr)(yr/365 day)(day/24 hr)(2000

lb/ton)
= 0.4 lb/hr

Hourly, full production
PM = (3.6 ton/yr)(yr/365 day)(day/24 hr)(2000 lb/ton)
= 0.8 lb/hr

4.2 Coal Screening

Emission Factor = 0.10 lb/ton (PEDCo 1976)

Control: 99% with baghouse.

Emissions:
Annual, production year 3
PM = (0.10 lb/ton)(6 x 10^6 ton/yr)(1-0.99 control)(day/24 hr)(ton/2000 lb)
= 3.0 ton/yr

Annual, full production
PM = (0.10 lb/ton)(12 x 10^6 ton/yr)(1-0.99 control)(day/24 hr) (ton/2000 lb)
= 6.0 ton/yr

Hourly, production year 3
PM = (3.6 ton/yr0(yr/365 day)(day/24 hr)(2000 lb/ton)
= 0.7 lb/hr

4.3 Coal Handling At Mine Services Area

There are two main coal transfer points in the mine services area; the transfer/weight stations and the surge pile. A control factor of 90% is assumed for enclosure.

$$\text{Emission Factor} = \frac{0.0018k(s/5)(u/5)(d/10)}{(M/2)^2}$$

Source: U.S. EPA 1985, Section 8.24

where k = particle size multiplier = 0.77
s = silt content of coal = 6.2%
u = annual average wind speed = 5.6 mph
d = drop distance for the conveyor system 10 feet
M = moisture content of the coal = 28%

$$EF = (0.0018)(0.77)(6.2/5)(5.6/5)(10/10)/(28/2)^2$$
$$= 1.0 \times 10^{-5} \text{ lb/ton}$$

Emissions:
Annual, production year 3
PM = (1.0 x 10^{-5} lb/ton)(6 x 10^6 ton/yr)(1-0.90 control) x (ton/2000 lb)(2 transfers)
= 0.006 ton/yr

Annual, full production
PM = $(1.0 \times 10^{-5}$ lb/ton)$(12 \times 10^{6}$ ton/yr) (1-0.90 control) x (ton/2000 lb)(2 transfers)
= 0.012 ton/yr

Hourly, production year 3
PM = (0.006 ton/yr)(yr/365 day)(day/24 hr) (2000 lb/ton)
= 0.00 lb/hr

Hourly, full production
PM = (0.012 ton/yr)(yr/365 day)(day/24 hr)(2000 lb/ton)
= 0.00 lb/hr

The mine services area coal handling emissions analysis above was based on a preliminary simplified description of the coal handling system. A more detailed analysis, too lengthy to include, revealed that the emissions would be less than those presented here. The major assumptions of this detailed analysis were: 99% control with a baghouse on splitter hopper, secondary crusher, and associated drop points; 90% control with enclosure for the transfer stations and surge pile and 20% of coal volume circulated through surge pile.

4.4 Coal Stockpile

Emission Factor = 1.6 u lb/acre-hr

ADEC Emission Factor. Source: U.S. EPA 1985, Section 8.24.

where u = wind speed = 2.5 m/s

EF = (1.6)(2.5)
= 4.0 lb/acre-hr

Control: 50% with watering.

Emissions:
Annual
PM = (4.0 lb/acre/hr)(2.35 acre)(8760 hr/yr) (ton/2000 lb) (1-0.50 control)
= 20.5 ton/yr

Hourly
PM = (4.0 lb/acre/hr)(2.35 acre)(8760 hr/yr) (1-0.50 control)

= 4.7 lb/hr

4.5 Wind Erosion - Mine Service Facilities Area

Emission Factor = 0.0576 ton/acre-yr (see Section 3.11)

Emissions:
Annual
PM = (0.0576 ton/acre-yr)(173 acres)
= 10.0 ton/yr

Hourly
PM = (10.0 ton/yr)(yr/365 day)(day/24 hr)(2000 lb/ton)
= 2.3 lb/hr

5.0 PORT FACILITY EMISSIONS

Emissions at the port facility would be associated with coal handling and storage, and coal and supply ship emissions.

5.1 Coal Handling at Port Facility

Eight main coal transfer points at the port facility were calculated, including the transfer station, the coal stacker, stockpile retrieval, and the shiploader.

Emission Factor = 1.0×10^{-5} lb/ton (see Section 4.3)

Control: 90% with enclosure.

Emissions:
Annual, production year 3
PM = (1.0×10^{-5} lb/ton)(6×10^{6} ton/yr)(1-0.90 control) (ton/2000 lb) x 8 transfers
= 0.024 ton/yr

Annual, full production
PM = (1.0×10^{-5} lb/ton)(12×10^{6} ton/yr)(1-0.90 control) (ton/2000 lb) x 8 transfers
= 0.048 ton/yr

Hourly, production year 3
PM = (0.024 ton/yr)(yr/365 day)(day/24 hr)(2000 lb/ton)
= 0.005 lb/hr

Hourly, full production
PM = (0.048 ton/yr)(yr/365 day)(day/24 hr)(2000 lb/ton)
= 0.01 lb/hr

The port facility coal handling emissions analysis above was based on a preliminary, simplified description of the coal handling system. A more detailed analysis, too lengthy to include, revealed that the emissions would be less than those presented here. The major assumptions of the detailed analysis were: 99% control with a baghouse on transfer stations #2 and #3; 90% control with enclosure for transfer station #1, the stackers, the shiploader, and conveyor drop points; 5% of coal volume to bypass silo.

5.2 Coal Stockpile at Port Facility

Emission Factor = 4.0 lb/acre-hr (see Section 4.4)

Control: 50% with watersprays and compaction.

Emissions:

Annual

PM = (4.0 lb/acre/hr)(24.9 acres)(1-0.50 control)(8760 hr/yr) (ton/2000 lb)
= 218.1 ton/yr

Hourly

PM = (218.1 ton/yr)(yr/365 day)(day/24 hr)(2000 lb/ton)
= 49.8 lb/hr

5.3 Wind Erosion - Port Facility

Emission Factor = 0.0576 ton/acre-yr (see Section 3.10)

Emissions:

Annual

PM = 0.0576 ton/acre-yr)(206 acres)
= 11.9 ton/yr

Hourly

PM = (11.9 ton/yr)(yr/365 day)(day/24 hr)(2000 lb/ton)
= 2.7 lb/hr

5.4 Coal Ship Emissions

Emissions of the ships while "hoteling" at port, during loading. The ships are assumed to be steamships burning 3% sulfur fuel. Also, the ships are assumed to be of the maximum size, which is approximately 100,000 tons capacity.

Fuel use during hoteling was assumed to be 12% of the full power fuel use of 0.58 lb fuel per ship horsepower hour, for a 21,000 hp vessel (CARB 1983. See Attachment B). Emission factors are based on AP-42 emission factors for steamship while hoteling (U.S. EPA 1985, Table II-3.2).

Emission Factors:

NO_x (as NO_2)	8.0 lb/hr
SO_2 (3% sulfur oil)	103.8 lb/hr
CO	1.1 lb/hr
VOC	0.1 lb/hr
PM	3.5 lb/hr

Emissions:
Annual
NO_x = (8.0 lb/hr)(3760 hr/yr)(ton/2000 lb)
= 15.0 ton/yr

Hourly
NO_x = 8.0 lb/hr

5.5 Fuel Delivery and Storage Emissions

Most of the project's power needs would be supplied through the use of electricity. Diesel fuel and gasoline would be required only for the vehicles and other minor uses. Hydrocarbon emissions from gasoline and diesel storage tanks at the port site and mine site were calculated according to the methodology in AP-42 Section 4.3.2 for fixed roof storage tanks (U.S. EPA 1985). The hydrocarbon emissions consist of vapors from breathing loss (LB) and working loss (LW).

The following parameters were common to all calculations:

Pa = 14.7 psia, Ts = 40°F, T = 41°F, Fp = 1.33, Kc = 1, Kn = 1.0, H = 0.5 h = 10 ft, Mv = 130 for diesel and 66 for gasoline, P = 0.0031 psia for diesel and 3.4 psia for gasoline.

Port site, diesel tanks
2 x 10^6 gallons diesel stored in two tanks. For each tank, D = 92 ft, H = 0.5 h = 10 ft. Also; C = 1.0, V = 2 x 10^6, N = 3.0.

LB = 0.64 ton/yr
Lw = 0.03 ton/yr
Lt = Lb + Lw
= 0.67 ton/yr

Port site, gasoline tank
D = 50 ft, H = 10 ft, C = 1, V = 315,000 gal, N = 3.0
LB = 7.90 ton/yr
Lw = 2.54 ton/yr
Lt = Lb + Lw
= 10.44 ton/yr

Mine site, diesel tank
D = 40 ft, H = 10 ft, C = 1, V = 164,000 gal, N = 36.6
LB = 0.08 ton/yr
Lw = 0.03 ton/yr
Lt = Lb + Lw
= 0.11 ton/yr

Mine site, gasoline tank
D = 14 ft, H = 10 ft, C = 0.7, V = 23,600 gal, N = 36.4
LB = 0.61 ton/yr

$Lw = 2.32$ ton/yr
$Lt = Lb + Lw$
$= 2.93$ ton/yr

Thus, total VOC emissions from full storage are 11.1 tons per year at the port site and 3.0 tons per year at the mine site.

5.6 Fuel and Supply Ship Emissions

There is currently no information available on fuel and supply ship schedules and sizes for the project. These ship emissions, therefore, have not been quantified. The main pollutant of concern from the vessels would be SO_2.

SO_2 emissions from the coal ships (Section 5.4) were quantified based on fairly conservative assumptions of 3% sulfur fuel and maximum vessel size. The modeled impacts from these ships were far below the PSD SO_2 increments (see EIS Table 5-21). Therefore, emissions from the fuel and supply ships are not expected to have any significant adverse impact on air quality.

6.0 HOUSING FACILITY EMISSIONS

Two potential sources of emissions at the housing facility would be the incinerator and the airport. The incinerator would burn only general camp refuse (household waste) to reduce the volume of material to be landfilled. The airport would be used to transport workers to and from the site. Approximately two 50 person flights per day would be required. The planes would be emitting for only a short period of time before they reached a level where the pollutants would be rapidly dispersed. Therefore, airport emissions are not quantified. Incinerator emission calculations follow. Note that the steam boiler at the housing facility will be electrically powered.

6.1 Incinerator Emissions

For a worst-case analysis, a peak load of 1000 lb/hr and operation 12 hours per day is assumed.

Emission Factors:

NO_x:	3 lb/ton
HC:	3 lb/ton
CO:	10 lb/ton
SO_2:	2.5 lb/ton
PM:	7 lb/ton

Source: U.S. EPA 1985, Table 2.3-1. Industrial-commercial multiple-chamber incinerator assumed.

Annual emissions:

NO_x = 3 lb NO_x/ton x 0.5 ton/hr x 12 hr/day x 365 day/yr x ton/2000 lb
= 3.3 ton/yr

Hourly

NO_x = (3 lb/ton)(0.5 ton/hr)
= 1.5 lb/hr

Emissions of the other pollutants are calculated likewise using the emission factors listed above.

Incinerator Emissions	NO_x	HC	CO	SO_2	PM
Peak emissions (lb/hr)	1.5	1.5	5	1.25	3.5
Annual emissions (ton/yr)	3.3	3.3	11.0	2.7	7.7

7.0 GENERAL PROJECT AREA EMISSIONS

General project emissions include all emissions which could not be assigned to either the mine area, service area, port facility, or housing area. This includes conveyor emissions and miscellaneous vehicle emissions.

7.1 Overland Conveyor Emissions

Conveyor emissions are typically quantified based on the number of transfer points, rather than the conveyor length, as the majority of emissions result from the coal drop at the transfer points. The overland conveyor is somewhat unusual due to its length (approximately 11 miles). A concerted effort was made to locate an emission factor for the conveyor itself, rather than one related to the transfer points. This included a literature search and contacting conveyor manufacturers. No emission factors based on conveyor length were found. Therefore, for lack of a better factor, therefore, emissions were calculated via an erosion type calculation for coal stockpiles. The exposed area was taken to be the area of the exposed coal on the conveyor belt. The wind speed was taken to be the speed of the conveyor belt. The conveyor belt would be sheltered from crosswinds since it is hooded over the top and one side. This hood would also help capture dust arising from conveyor movement.

The overland conveyor emissions as quantified below are in addition to the conveyor transfer emissions quantified elsewhere. The shorter conveyors at the mine/mine services area and at the port site are typical of the conveyors for which the transfer point emission factors were developed. It would therefore be inappropriate to include a quantification of "wind erosion" emissions for those conveyors.

Emission Factor: 1.6c lb/acre-hr

Source: U.S. EPA 1985, Section 8.24.

where c = the speed of conveyor belt = 5.08 m/sec

Emission Factor = (1.6)(5.08)
= 8.13 lb/acre-hr

Control: 90% for conveyor belt hood

Emissions:
Annual, production year 3
PM = (8.13 lb/acre-hr)(2 ft wide)(55,800 ft long)(acre/43,560 ft^2) x (1-0.90 control)(169 day/yr)(ton/2000 lb)
= 4.2 ton/yr

Annual, full production
PM = (8.13 lb/acre-hr)(2 ft wide)(55,800 ft long)(acre/43,560 ft^2)(1-0.90 control) (338 day/hr)(ton/2000 lb)
= 8.4 ton/yr

Hourly
PM = (8.13 lb/acre-hr)(2 ft wide)(55,800 ft long)(acre/43,560 ft)x (1-0.90 control)
= 2.1 lb/hr

7.2 Miscellaneous Vehicle Traffic Fugitive Dust

Emission Factor = $5.9k(s/12)(S/30)(W/3)^{0.7}(w/4)^{0.5}$ lb/VMT

Source: U.S. EPA 1985, Section 11.2

where k = particle size multiplier = 0.8
s = silt content of road material = 8%
S = vehicle speed = 30 mph
W = vehicle weight = 2 tons
w = number of wheels = 4

EF = $5.9(0.8)(8/12)(30/30)(2/3)^{0.7}(4/4)^{0.5}$
= 2.37 lb/VMT

Control: 85% control with chemical application.

Emissions:
Annual
PM = (2.37 lb/VMT)(51,000 VMT/yr)(1-0.85 control)(ton/2000)
= 9.1 ton/yr
Hourly
PM = (9.1 ton/yr)(yr/365 day)(day/24 hr) (2000 lb/ton)
= 2.1 lb/hr

7.3 Miscellaneous Vehicle Tailpipe Emissions

Emission Factors:

NO_x: 1.19 g/mi
SO_2: 0.8 g/mi
CO: 13.29 g/mi
VOC: 1.55 g/mi
PM: 0.2 g/mi

Source: NO_x, CO, and TOG are EMFAC7PC emission factors for medium duty trucks, 50% gasoline and 50% diesel. PM estimated from truck emission factors (CARB 1986). SO_2 estimated from Tables II-7.1 and II-7.2 (USEPA 1985).

Emissions:
Annual

$$NO_x = (1.19 \text{ g/mi})(51{,}000 \text{ VMT/yr})(\text{lb}/454 \text{ g})(\text{ton}/2000 \text{ lb}) = 0.067 \text{ ton/yr}$$

Hourly

$$NO_x = (0.067 \text{ ton/yr})(\text{yr}/365 \text{ day})(\text{day}/24 \text{ hr})(2000 \text{ lb/ton}) = 0.004 \text{ lb/hr}$$

Annual and hourly emissions of the other pollutants are calculated likewise, using the above emission factors.

	NO_x	SO_2	CO	VOC	PM
Annual Emissions (tons/yr)	0.067	0.045	0.746	0.087	0.011
Hourly Emissions (lb/hr)	0.004	0.003	0.050	0.006	0.001

7.4 Other Project Sources

Other project components which would be potential sources of air emissions include the sewage treatment plants, water treatment plants, heliport, temporary landfills, and emergency generators. The temporary landfills would only be used for construction materials. The heliport would primarily be used during construction. These minor sources of construction emissions are not quantified. The water treatment plants and sewage treatment plants would be very minor sources of hydrocarbons and possibly particulates. The emergency generator sizes and fuel types have not been specified yet. Therefore, emissions from these sources are not quantified.

8.0 SECONDARY POWER GENERATION EMISSIONS

Power generation emissions are based on projected emissions from a proposed Chugach Electric project to bring a turbine on line as a baseline unit rather than a back-up unit.

9.0 LEVEL 1 VISIBILITY SCREENING ANALYSIS

(See EPA 1980 for a discussion of variables and visibility analyses).

x = distance to nearest Class I area
  = 137 km to Tuxedni National Wildlife Refuge and Wilderness Area
Qpart = particulate mass emission rate
  = (885.2 ton/yr)(yr/338 day)(2000 Mt/2200 ton)
  = 2.38 Mt/day
QNO_x = (186.5 ton/yr)(yr/338 day)(2000 Mt/2200 ton)
  = 0.502 Mt/day
QSO_2 = (216.5 ton/yr)(yr/338 day)(2000 Mt/2200 ton)
  = 0.582 Mt/day

x is greater than 100 km, therefore, S_z = 100 m
$p = 2.0 \times 10^8/S_z\ x$
  $= 2.0 \times 10^8/(100\ m)(137\ km) = 1.46 \times 10^4$
rvo = 170 km (highest visibility area)

$Taerosol = (1.06 \times 10^{-5})(170\ km)(2.38 + 1.31\ (0.582)$
  $= 5.66 \times 10^{-3}$

$Tpart = 10(10^{-7})(p)(Qpart)$
  $= 10(10^{-7})(1.46 \times 10^4)(2.38)$
  $= 0.0347$
$TNO_x = 1.7(10^{-7})(p)(QNO_x)$
  $= 1.7\ (10^{-7})(1.46 \times 10^4)(0.502)$
  $= 1.25 \times 10^{-3}$

$C1 = [1.25 \times 10^{-3}/(0.0347 + 1.25 \times 10^{-3})][1 - \exp(-0.0347 - 1.25 \times 10^{-3})]$
  $[\exp(-0.78(137/170)]$
  $= 6.55 \times 10^{-4}$
$C2 = [1 - (1/(C1 + 1))\ \exp(- Tpart - TNO_2)][\exp(-1.56\ x/rvo)]$
  $= [1 - (1/(1 + 6.55 \times 10^{-4})\ \exp(-0.0347 - 1.25 \times 10^{-3})]$
  $[\exp(-1.56(137/170)]$
  $= 0.0102$
$C3 = 0.368\ [1 - \exp(-Taerosol)]$
  $= 0.368[1 - \exp(-5.66 \times 10^{-3})]$
  $= 2.07 \times 10^{-3}$

Since C1, C2, and C3 are all well below 0.10, there will be no impact of the project on visibility in any Class I area.

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ATTACHMENT A

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FUGITIVE EMISSION FACTORS, SURFACE MINES

SOURCE	EMISSION FACTOR	UNITS
Overburden Removal		
- Truck/Shovel	$\frac{.0018k\ (s/5)(u/5)(d/5)}{(M/2)^2(y/6).33}$	lb/ton
- Scraper, Dozers	32(365-N)/365	lbs/hr
- Dragline	.04x0.75(365-N)/365	lbs/yd^3
Overburden Drilling		
Overburden Blasting	50lbs/blast x 0.75	
Overburden Hauling	.0067w3.4 L0.2 or	lb/VMT
	$5.9k(s/12)(S/30)(W/3)0.7(w/4)0.5\left(\frac{365-N}{365}\right)$	
Overburden Dumping (batch drop)	0.017k	lb/ton
Product Drilling		
Product Blasting	coal: 35 lbs/blast x 0.75	
Product Removal	coal: .003 x 0.70	lbs/ton
Product Hauling	0.0067 w3.4 L0.2 or	lb/VMT
	$5.9k(s/12)(S/30)(W/3)^{0.7}(w/4)^{0.5}\left(\frac{365-N}{365}\right)$	
Reclamation	k 4.8 s0.6	lb/acre
Haulroad Repair/ Construction	32(365-N)/365	lbs/hr
Wind Erosion		
- stripped area	aICKL'V'	tons/acre/yr
- overburden stockpiles	.0756 sf(365-N)/235	lb/day/acre
- wash stockpiles	.0756 sf(365-N)/235	lb/day/acre
- product stockpiles	coal; 1.6u	lbs/acre/hr
- tailings ponds	aICKL'V'	tons/acre/yr

ATTACHMENT A
(continued)

SOURCE	EMISSION FACTOR	UNITS
Product Preparation		
conveyors/transfer points/ truck dump	0.017 x 0.75 (coal)	lb/ton
stackers - raw - surge - fines	$.0018k \frac{(s/5)(u/5)(H/10)}{(M/2)^2}$	lb/ton
Crusing - primary - secondary - tertiary	EPA-AP-42	
Screening	EPA-AP-42	
Graders/compacting on stockpiles	32(365-N)/365	lbs/hr
Load Out/Tipple		
Additional Sources		
Slash Burning	272	lbs/acre
Miscellaneous Road Traffic	$\frac{5.97}{M^4}$	lb/VMT
Ship Traffic	EPA-AP-42	
Fuel Storage	EPA-AP-42	
Incineration	BACT or EPA-AP-42	
Power Generation	BACT or EPA-AP-42	

f: % time - windspeeds >12 mph
N: Nr. days - precip. >0.01 inch/year - table
M: (surface) moisture content - %
L: Surface silt loading (g/m^2)
k: Particle size mulitplier - table
S: Silt content (%) - table
U: Average wind speed (M/S)
H;d: Drop distance (feet)
Y: Batch size (yd^3)
w: Mean number of wheels
W: Mean vehicle weight (tons)

ATTACHMENT A
(continued)

A: Fraction wind erosion losses becoming suspended)
I: Surface erodability)
C: Climatic factor) Tables AP-42
K: Surface roughness factor)
L': Unsheltered field width factor) Use 1.0
V': Vegetation cover factor)

Surface soil type	A	I (tons/acre/yr)
Rocky, gravelly	0.025	38
Sandy	0.010	134
Fine	0.041	52
Clay loam	0.025	47

ATTACHMENT B

(EXCERPT FROM: CALIFORNIA AIR RESOURCES BOARD, 1983. DRAFT REPORT TO THE CALIFORNIA LEGISLATURE ON AIR POLLUTANT EMISSIONS FROM MARINE VESSELS).

3. Factors Affecting Fuel Consumption

For a given fuel sulfur content, emissions of sulfur dioxide are directly related to a vessel's fuel consumption rate. The fuel consumption rate in turn depends on the size (shaft horsepower or SHP) and the type (diesel, steam turbine, gas turbine) of the powerplant used to drive a vessel and on the amount of power used to perform various operations. A 14,000 deadweight ton (DWT) general freighter would consume fuel at a rate of about 60 tons per day while a 70,000 DWT tanker would consume about 110 tons per day of fuel at cruising speed. Those vessels are of a size that typically visit California Coastal Waters. Marine diesel engines burn 0.28 to 0.44 pound of fuel per SHP hour and marine steam engines burn 0.51 to 0.65 pound per SHP hour.[8/]

a. Ship Powerplant Size

The power required of a ship's powerplant is a function of the size of the ship and the speed at which the ship is intended to operate. Tankers and bulk carriers are designed to carry large loads, and a high speed is not essential to their operation. Maximum cruising speeds for these types of vessels are generally in the range of 16 knots.[9/] Modern passenger and container-carrying ships, on the other hand, operate at speeds of 20 to 25 knots.[10/] Container vessels carry cargoes that have high worth to weight ratios, are perishable, or for other reasons must be delivered rapidly. Thus for the same tonnage of cargo carrying capacity, bulk carriers and tankers have smaller powerplants than container ships, general cargo carriers, and other specialized types of dry cargo vessels. Military vessels usually have at least three to four times the total shaft horsepower of commercial vessels of equivalent size.[11/]

Power requirements for commercial vessels typically range from about 9,000 SHP for a 12,000 DWT vessel to about 45,000 SHP for an LNG carrier.* Typical horsepower requirements for tankers are shown in Table VII-4. As the table shows, the maximum power requirement for a tanker is approximately 65,000 SHP. However, tankers larger than about 280,000 DWT do not visit California Coastal Waters. Typical maximum power requirements for other types of ships are shown in Table VII-5. As Table VII-5 shows, container ships can have much larger powerplants than either tankers or bulk carriers.

Table VII-6 shows the average shaft horsepower for ships which visited various California ports in 1976 and 1979. In developing emissions inventories, the staff took into account the differences in powerplant sizes of vessels that operate in California Coastal Waters.

Shoreside facilities for which sulfur dioxide emission controls are required are comparable in size to marine vessel boilers and engines, and many are smaller than typical marine vessel power plants. Industrial boilers and process heaters in the South Coast Air Basin have heat input capabilities as small as 25 million Btus/hr;[12/] steam generators used in oil production operations in Kern County have heat input capacities of 20 to 60 million Btus/hour.[13/] To control sulfur dioxide emissions in the South Coast Air Basin, boilers and heaters that burn oil are required to burn low sulfur fuel oil and most steam generators in Kern County are equipped with stack gas

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* However, a small commercial fishing vessel can have a power rating of 100 to 200 SHP.

TABLE VII-4
POWERPLANT REQUIREMENTS FOR TANKERS, BY DEADWEIGHT TON

Displacement D.W.T.	Power SHP
10,000	6,000
15,000	10,000
25,000	12,000
50,000	20,000
100,000	25,000
200,000	30,000
300,000	40,000
500,000	60,000
550,000	65,000

Sources: Air Pollution Impact of Maritime Shipping Operations in the Port of Houston, Texas A & M University, November 5, 1973.

The Tanker Register, H. Clarkson & Company Limited, London, England, 1981.

TABLE VII-5
MAXIMUM POWERPLANT REQUIREMENTS FOR COMMERCIAL MARINE VESSELS

Type of Vessel	Maximum Power SHP
Bulk Carrier	40,000
Oil Tanker	65,000
Container Ship	80,000

Sources: Air Pollution Impact of Maritime Shipping Operations in the Port of Houston, Texas A & M University, November 5, 1973.

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REFERENCE FOR CHAPTER IX

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Appendix F

Procedures for Wetlands Protection - Statement of Findings

ENVIRONMENTAL PROTECTION AGENCY
PROCEDURES ON WETLANDS PROTECTION

Executive Order 11990 entitled "Protection of Wetlands," dated May 24, 1977, requires federal agencies to take action to avoid adversely impacting wetlands wherever possible, to minimize wetlands destruction, and to preserve the values of wetlands. Procedures have been established (40 CFR Part 6, Appendix A, Section 6) for review of proposed EPA actions to determine whether such actions will affect wetlands, and if so, then to conduct a wetlands assessment, act to minimize potential harm to wetlands, evaluate alternative actions, and to prepare a Statement of Findings. The Statement of Findings outlines the basis for the decision, alternatives considered, actions to minimize harm to wetlands, and overall wetland effects. These procedures, including the appropriate public notice requirements, may be incorporated into the EIS process where an EIS is required. Because the proposed Diamond Chuitna coal project will be located in and affect wetlands, the above procedures have been incorporated into this EIS. The Statement of Findings is included below.

STATEMENT OF FINDINGS

The proposed EPA action is issuance of NPDES permits, authorizing discharges of wastewater associated with the coal mine operations, housing area, and (alternative) port sites at Ladd and Granite Point. The applicant wishes to retain two transportation corridor/port site options (southern/Granite Point and northern/Ladd). Two alternatives incorporating these options are therefore identified in this FEIS as the applicant's Proposed Project. The applicant's proposal entails ultimate development of only one of these transportation corridors. The haul road and conveyor would both be constructed within the same corridor leading to the associated port site (either Ladd or Granite Point). The preferred agency alternative, as discussed in this FEIS, incorporates the eastern corridor and port site at Ladd. However, NPDES permits are not required for the transportation corridor, so EPA does not have direct permitting authority affecting selection of either the (preferred) eastern or (proposed) northern corridor to the Ladd port.

By far the greatest project-related wetland losses would occur at the actual mine site. Smaller wetland losses would occur within the alternative transportation corridor/port sites. This Statement of Findings addresses the three EIS action alternatives, all of which incorporate the same mine site location. Additional supporting information is provided in the FEIS as noted.

Reasons Proposed Project Must Be Located In Wetlands Including Consideration of Alternatives

The process by which the various Diamond Chuitna project component options were evaluated and alternatives selected is described in Chapter 3 of this FEIS. Optional mine site and mine service area component locations were not evaluated in the EIS. The mine site is located on state coal lease land in the Beluga/Chuitna region of Alaska where geological studies have shown coal reserves to exist. Economically recoverable coal reserves exist at the proposed mine site, where the coal seams are relatively shallow and thick, resulting in a minimum necessary amount of overburden excavation and surface disturbance. Surrounding Beluga/Chuitna coal reserves are generally deeper and/or in thinner seams. Optional mine service area component locations were not addressed due to logistical constraints and the necessity for the service area to be located in direct proximity to the mine.

Optional locations for the non-mine project components (coal transportation corridors, port site, overburden stockpile, and housing area/airstrip) were evaluated in the EIS (see Chapter 3 of this FEIS). These options, when combined with the mine site/service area components, were used to formulate the alternatives evaluated in detail in the EIS. The optional port site locations were constrained by relative distance from the mine, and technical, economic, and environmental considerations. The general transportation corridor alignments were constrained by the location of the mine service area and the respective optional port sites to which they connect.

Wetlands occur throughout the Beluga region, both within and outside the area affected by the project alternatives. Wetland losses would occur under all of the alternatives addressed in the EIS. No other alternatives are available which would impact fewer wetlands while allowing the project to proceed.

Project Effects on Natural and Beneficial Values of Wetlands

The functional values of the wetlands in the project area are discussed in Section 4.3.2.3 of this FEIS. Wetland impacts are discussed in Section 5.3.1.4 (and in other sections referenced) of this FEIS. The acreages of wetlands impacted, by project component, are shown on Table 5-2 of this FEIS. By far the largest proportion of wetlands (1,353 acres) would be directly impacted by the mine site component. The amount of wetlands directly impacted by the alternative transportation corridors/port sites would be approximately 3%, under the eastern/Ladd alternative, 5%, under the northern/Ladd alternative, and 14%, under the southern/Granite Point alternative, of the total direct wetland losses resulting from the entire project.

The wetlands in the project area are not alone high value habitat, but the habitat diversity and forest edge associated with the interspersed wetlands and uplands contributes significantly to the overall moderate to high habitat value of the area. Wetland-related plant and animal productivity would be directly impacted as mining progresses southwesterly, while reclamation will follow the mining in stages. The acidic, muskeg-type wetlands which are widely dispersed throughout the area are not highly productive and the net primary productivity of replacement communities could be as high or higher than the communities that now exist. Therefore adverse impacts to primary wetland productivity would not be significant on a regional scale. Food webs would be interrupted in the immediate vicinity of pre-mining wetland areas but such interruption would probably not be significant on a regional basis because of the isolated nature of most area wetlands and the large extent of similar wetlands outside the project area.

Significant impacts to local hydrologic regimes could occur as a result of the direct loss of wetlands at the mine site. Wetlands in the project area store large quantities of water and play an important role in surface water - ground water interactions. Removal of the deep organic layers underlying the muskeg on the sides of the stream valleys could disrupt post-mining shallow groundwater baseflows to area streams. Soil porosity and deeper groundwater recharge rates could increase as a result of removal of water-retaining organic deposits. An extensive sediment pond system will be constructed which may, during the period they are in operation, enhance groundwater recharge and moderate flood peaks in the Chuitna drainage.

The removal of wetlands could alter the quality of surface water runoff from the reclaimed mine area. Wetlands tend to remove suspended sediment from inflowing waters therefore postreclamation runoff would likely contain more sediment than at present. The acidity of postreclamation runoff should be reduced due to the net loss of peat deposits. The planned sediment pond system will control the flow of sediment into streams during the period of mining, as reclamation proceeds. Planned undisturbed vegetative buffers between the mined area and surrounding streams will also reduce sediment in the runoff.

Actions Taken to Minimize Potential Harm to Wetlands

The project reclamation plan, as required by the State Surface Coal Mining Permit, includes a plan for the restoration of wetlands in the mining area. This plan provides for the enhancement of wetlands development through creation of two to five acre peat-filled depressions throughout the reclaimed mine area, and the rehabilitation of certain sediment control ponds. The permit also requires construction of a minimum of four 1/2 acre coho salmon rearing ponds. These requirements are subject to further review and possible revisions as necessary with the goal of achieving the desired restoration of wetland functions. The wetland restoration measures would reduce net wetland losses expected as a result of the project. Postreclamation wildlife habitat value could be less than pre-mining conditions due to reductions in habitat diversity now contributed by the interspersed wetland/upland areas; however, this diversity is expected to re-establish over the long-term.

An extensive sediment pond system is planned, which is expected to reduce the hydrologic and water quality impacts associated with the direct loss of wetlands during the period of mining, as reclamation proceeds.

Measures will also be undertaken to minimize the adverse effects of non-mine project components on wetlands. Project roadways and facilities have been designed to avoid wetland areas. The specific transportation corridor alignments are routed around wetlands wherever feasible instead of traveling the shortest distance through wetlands. Drainage and sediment control measures, including construction of runoff diversions and collection ditches, installation of culverts, revegetation of roadcuts, and site-specific sediment control measures will be undertaken for project facilities and roads. In areas where the roadway crosses bogs or muskegs, a construction technique will be used which will effectively "float" the road over the undisturbed underlying vegetation mat.